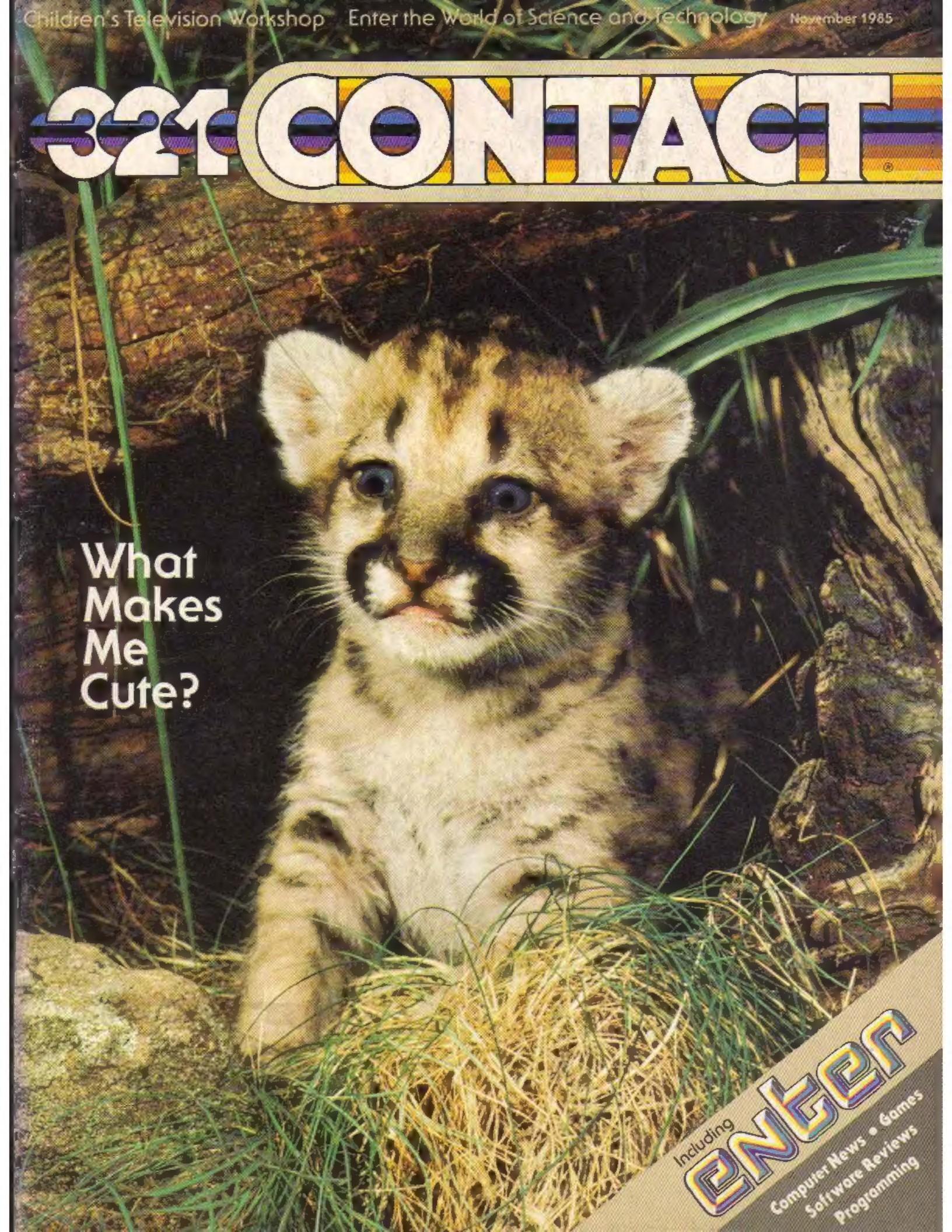


# 321 CONTACT



What  
Makes  
Me  
Cute?

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The Ultimate  
Super Robots

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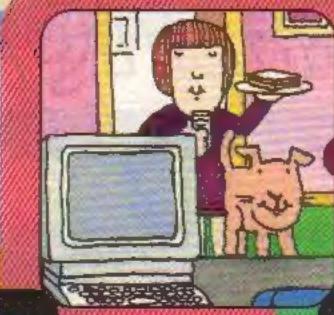
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Our cover shows a two-month-old mountain lion cub.

Cover Photo: Animals Animals/Breck P. Kent

# Coming Attractions

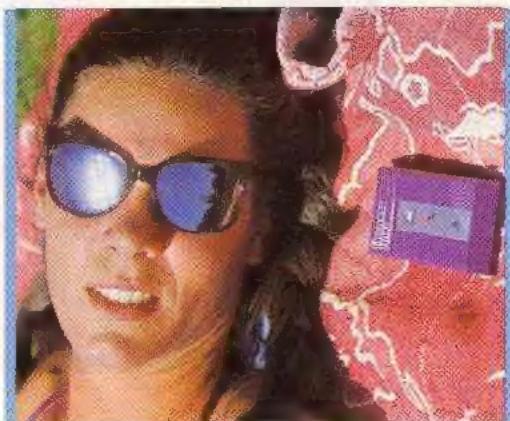
## Shake, Rattle and Roll

Is there an earth-shaking experience in your future?

Don't try to guess. David Hedman can give you the answer. Mr. Hedman is the director of Epicenter, the Environmental Protection and Information Center in Palo Alto, California. With help from a computer, Mr. Hedman has developed an "earthquake formula" that can predict whether a home is likely to be damaged by an earthquake.

The formula, called the Seismic Survival Indicator (SSI), sets up a scale from zero to 100. If a house is rated 100, then it's likely to survive the earthquake with almost no damage. If the house is rated zero, it's likely to collapse.

Ratings are based on the way the home was built and how close it is to earthquake faults, explains Mr. Hedman. Using this information, people may someday be able to build safer homes that can survive almost any earth-shaking event.



## Sunburn Deeper

OUCH!

Someone just touched your sunburn. Is that the way you find out that you stayed in the sun too long?

Not anymore, thanks to the Ultraviolet Sensor. This new gadget contains a special sensing device. The device measures the sun's rays while you're sunbathing at the beach. As we all know, getting too much sun just isn't healthy. So when the Ultraviolet Sensor senses you've had enough sun, a beep sounds to warn you that it's the right time to cover up.

BEEP!

That sure sounds a lot better than OUCH!

## Dry Idea

Ah, the sweet smell of success!

Scientists at the General Medical Company of Los Angeles didn't work up a sweat in creating their latest invention, Drionic.

Drionic, you see, is a new electronic device that moves perspiration (sweat) from feet, hands

and underarms to other parts of the body. The treatment works for up to six weeks.

What's the point of putting perspiration somewhere else? Well, for example, people with sweaty hands can't work in electronics or in the photo industry. With Drionic, these people may be able to lend a dry hand and get to work.

## Dog Doctor in Orbit

Dogs will hit the woof when they hear about this.

For the first time, NASA, the U.S. space agency, is sending a veterinarian into space. A veterinarian is a doctor who takes care of dogs, cats and many other kinds of animals.

Dr. Robert Phillips will fly aboard a space shuttle flight in 1986. His job will be to test the effects of space flight on rats, monkey squirrels and other crew members.

What? No dogs!  
That sure is a doggone shame.



## Speedy Bytes

WHOOOOOSH!

What was that? A bird? A plane? Nope, not even Superman. That was the Cray 2, the newest, fastest super-computer.

This \$17.6 million computer contains 240,000 microchips. It can perform between 600 million and 1.2 billion calculations a second. By comparison, an average personal computer can do only 1,000 computations a second.



## What's My Lion?

African lions are going on-line with computers.

Researchers at a wildlife park in Tanzania, a nation in Africa, are using portable computers to keep track of the park's lion population.

The lions don't enter the data themselves. Researchers keep track of such things as the lion's hunting habits and roaring behavior. Then they put this information into the computer. With the help of a special computer program, the researchers can analyze the animal's habits and learn a whole lot more about lion lifestyles.



## Iceberg Alert!

The U.S. Coast Guard is eyeing the ice—icebergs, that is.

But the Coast Guard's special International Ice Patrol is using more than its eyes to watch icebergs. Satellites, radar and computers are helping these ice-watchers track the giant icebergs. The satellites and radar help the Patrol to pinpoint the bergs, and the computer keeps track of all this data.

The Patrol even has special names for the different sizes of icebergs. For instance, a grand piano-sized iceberg is called a "growler," and cottage-sized icebergs are called "berg bits."

But what's so important about watching icebergs? "It's a very important mission," says one of the Coast Guard team. "We're talking about saving ships, saving lives." The Patrol passes its information along to ships sailing in iceberg filled waters. And that makes sailing safer.

## Chalkboards Erased Forever

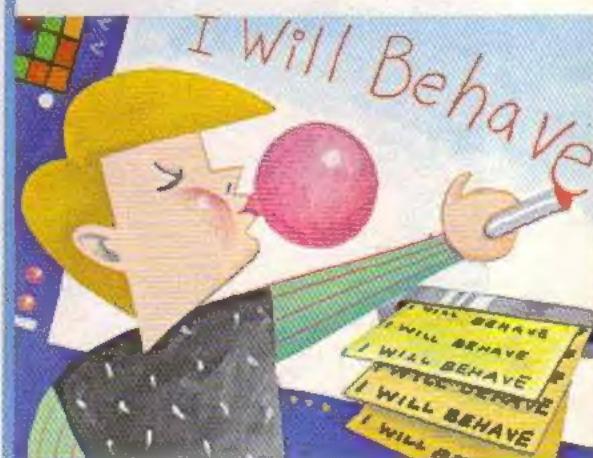
The old-fashioned chalkboard may soon be a thing of the past. Researchers at a Japanese company have developed an elec-

tronic chalkboard that soon will be available in the U.S.

The chalkboard is really a 6-foot by 5-foot whiteboard that you write on with special color marking pens. It does have one old-fashioned feature: You still use erasers to clean the board.

But this electronic chalkboard's best feature may be its built-in copier. If you want to save what's written on the electronic chalkboard, just hit a button and the copier will turn out up to 99 copies of your work.

What a great trick! The next time the teacher makes you write 100 times on the chalkboard "I will not chew gum in class," all you have to do is write it once and hit the copy button!



## So What's New?

You tell us and you'll get a nifty CONTACT T-shirt—if we print your story. Send us any science stories that have to do with the future (which could even be next week)! Send stories to:

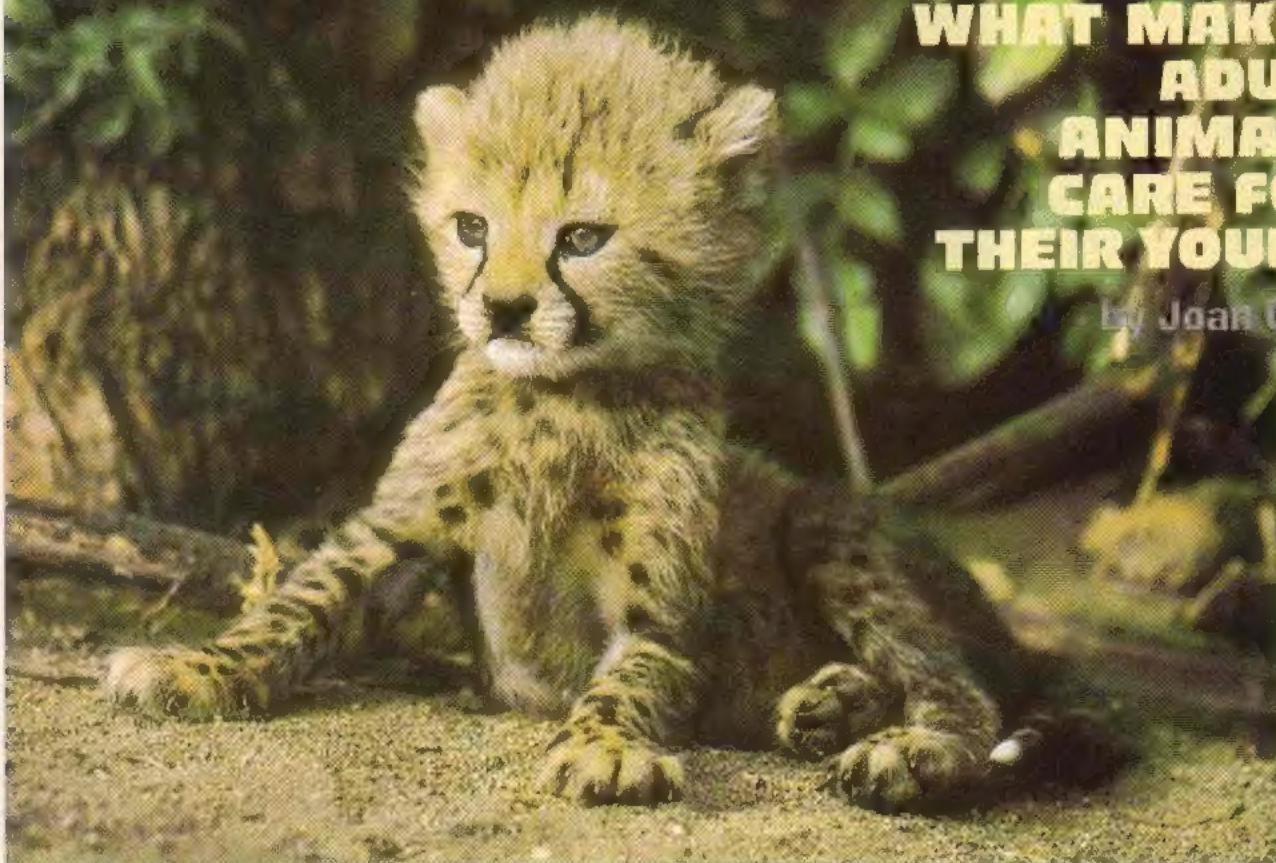
**Coming Attractions**  
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# Isn't That Cute?

WHAT MAKES  
ADULT  
ANIMALS  
CARE FOR  
THEIR YOUNG

By Joan Graf

PHOTO © ZOOLOGICAL SOCIETY OF SAN DIEGO/JOHN GARRISON



What do babies, Mickey Mouse and panda bears have in common?

Come on, think hard.

Got it? If you said they're all cute, you're absolutely right.

What's more, you've just discovered a question that has fascinated many scientists. The question: Why do humans find babies and some other animals so cute?

To find the answer, let's take another look at a human baby, Mickey Mouse, a panda or any animal that most humans think is cute.

While these animals don't look exactly alike, they do have some things in common. These animals share similar features—a large round head, a soft body, big eyes and a small nose. And, they all seem to behave the same way—playful and just a little bit clumsy. Scientists believe these are the things that make babies

and certain other animals so cute to us.

But why would any scientists worth their lab coats want to study "cuteness"? After all, why is it so important for a baby to look cute?

According to some scientists, this quality of "cuteness" can be very important. Being cute means a lot more than being fun to look at. It can actually play a big part in helping a young animal survive.

A baby monkey, for instance, simply doesn't survive unless his mother reacts to him as a baby that needs to be cared for, and not as an adult animal that can take care of itself. Being cute makes it possible for babies to "attract attention from their parents and get taken care of," explains Dr. Alison Jolly, an animal scientist. For a baby who can't feed or defend itself, getting taken care of is very important.

Being cute has another advantage for a young

Newborn swans have brown feathers. The feathers alert adult swans to take good care of the babies.

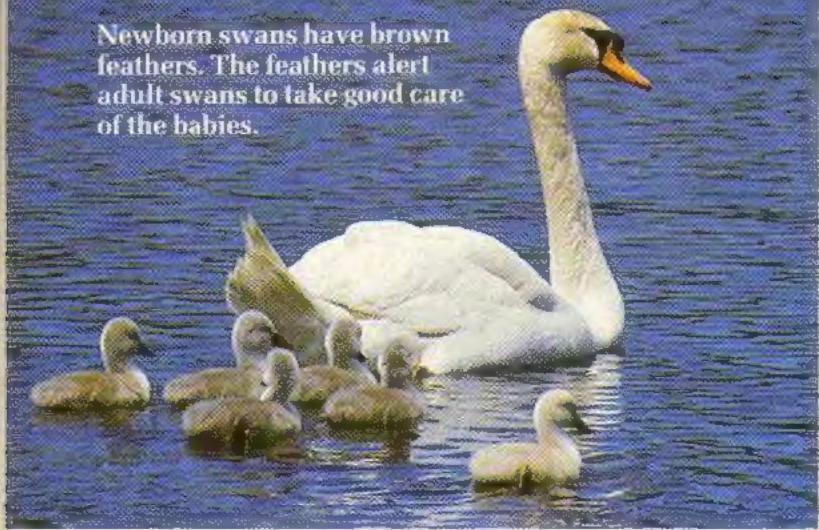


PHOTO: ANIMALS ANIMALS/MARGOT CONTE

Baby human meets a toy baby bear. Human babies have large, rounded foreheads.

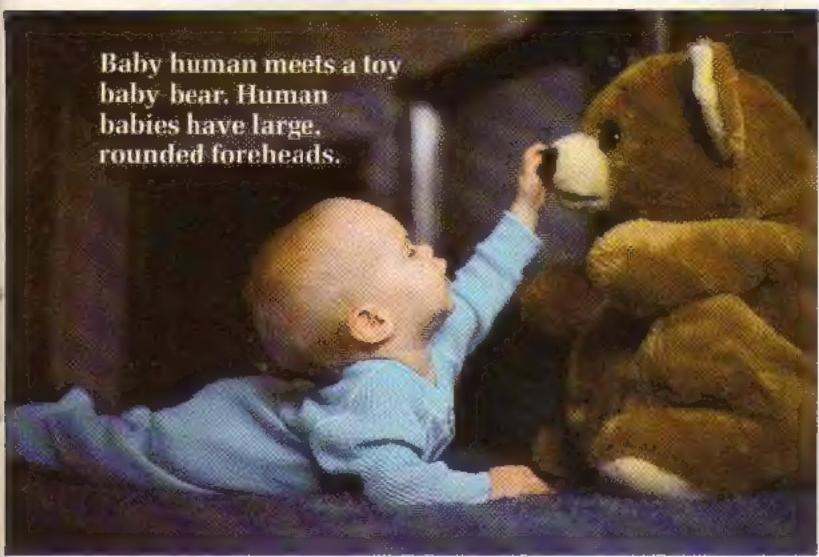


PHOTO: COMSTOCK INC.

The features of this baby orangutan signal to its mother that it needs special care.

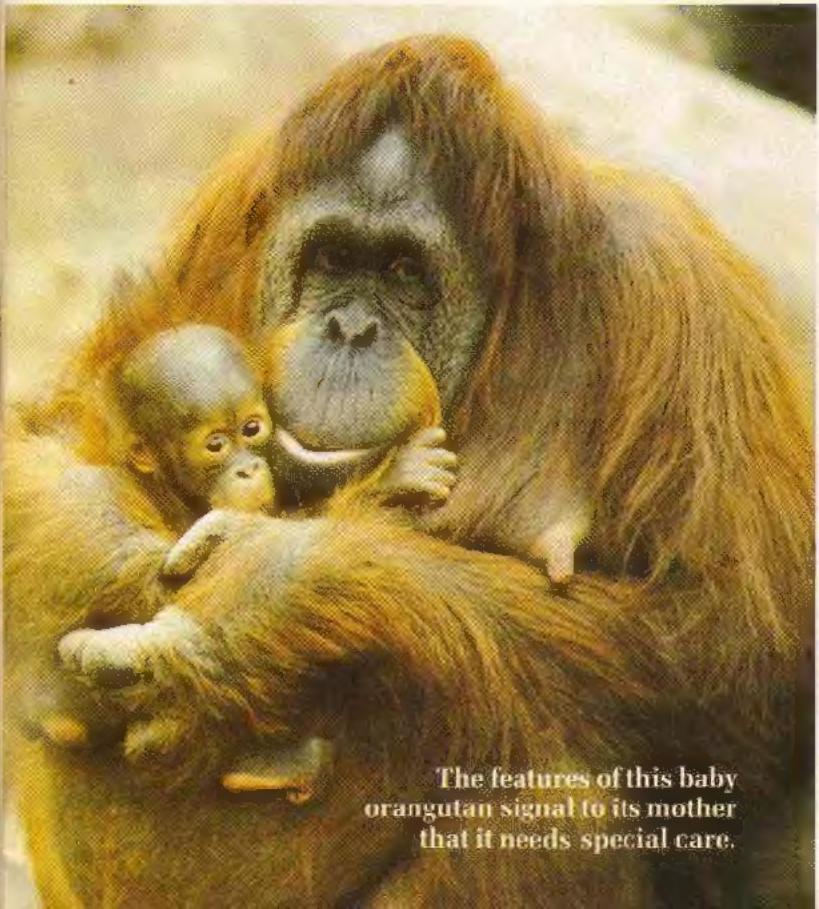


PHOTO: ANIMALS ANIMALS/ERIK MIRIAM AUSTRALIA

animal, explains Dr. Jolly. It keeps other members of a group from hurting that baby.

### Getting into Mischief

Young animals, such as chimpanzees, bear cubs and even human babies are playful and curious. They wrestle and tumble and nip at objects—and other animals. Many adult animals wouldn't stand for such mischief from an older member of the group. But, because babies are cute, adults will allow them to get away with being something of a pest.

Some baby animals even have a specially marked coat of fur or feathers to signal others in the group that they need to be taken care of. For example, black and white colobus monkeys have snowy white babies that get darker as they get older. And newborn swans have brown feathers rather than white feathers like an adult swan. (Remember the story of "The Ugly Duckling"?)

The protective treatment these animals receive as babies disappears when their appearance changes. For instance, says Dr. Ted Grand of the National Zoo in Washington D.C., "As soon as a monkey grows a coat of fur that makes him look more like a grown-up, he gets in a whole lot of trouble." ▶▶

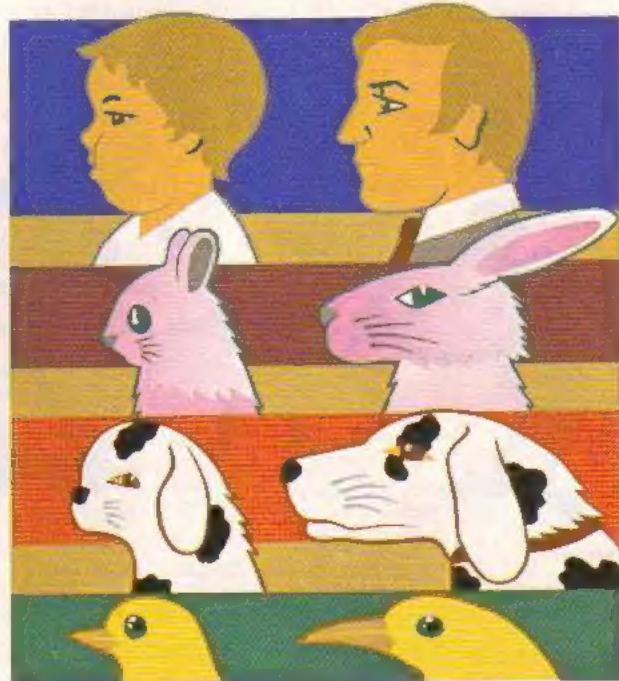
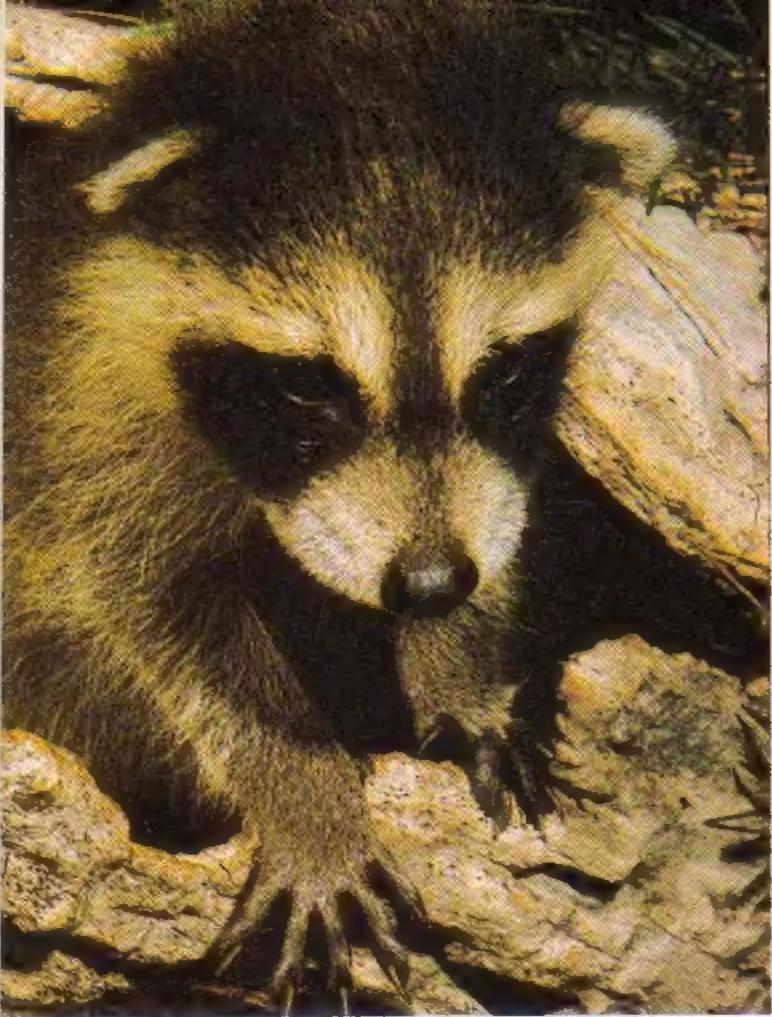


ILLUSTRATION BY JO LYNN CRABBS

The profiles on the left show baby characteristics. Adult profiles are on the right. "Baby" features include a rounded head shape, a large forehead, and large eyes.



**Left:** This baby raccoon takes a first look at its surroundings.

But as long as an animal keeps a baby-like appearance, it will receive special care and treatment. That appearance seems to send a "signal" to all adults.

Right now, scientists aren't really sure where this "signal" comes from. One scientist, Konrad Lorenz, believed that baby-like traits (such as large eyes and softness) automatically set off feelings of love and caring. Other researchers think that humans learn from parents and brothers and sisters to feel warm and friendly when they see a baby's special looks.

### A Marvelous Mouse!

Scientists aren't the only ones who study what makes a creature look cute. Cartoonists are experts at turning almost any animal into a character people would love to hug.

Take Mickey Mouse, for instance. "The Mickey Mouse who hit the movie houses in the

PHOTO © ANIMAL SANCTUARY & LESZCZYNSKI



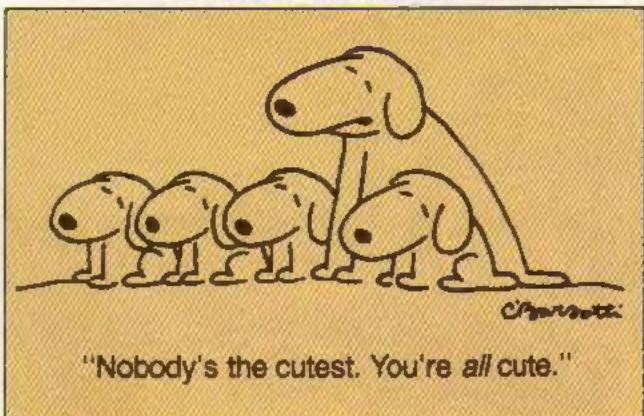
Can you see how Mickey Mouse has become "cuter" over the years?



PHOTO: GLOBE PHOTOS/CHARLES BENNER

**Left:** Most people say adult pandas are "cute." One reason: They have large eyes and large foreheads—just like a baby.

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the years. But he admits that Mickey's friend, Donald Duck, did go through some planned changes. "Audiences didn't like the way Donald looked at first," said Mr. Thomas. "He looked too much like a duck!" So Walt Disney told the cartoonists to make Donald cuter by making his beak shorter, and his eyes and head larger.

### Neoteny and Nice Gorillas

In all this talk about babies and cartoon characters, you might think we'd forgotten about the panda.

Not at all! We saved the panda for last because...well, because the panda is so cute even after it's no longer a baby. The panda has a large round head and a soft round body. It has big eyes and appears to be playful and clumsy. When a creature keeps these baby-like traits even after it grows up, that's called *neoteny*. This quality of neoteny sends a "signal" that makes humans respond as if this animal were still a baby. In other words, many humans might want to hug and cuddle the panda. (Even though it's never a good idea to hug and cuddle a wild animal.)

But, for some animals, looks can fool people. Take the case of the mountain gorilla. Take one quick glance at the mountain gorilla and you see a fierce-looking animal that you might think is looking for a fight. In truth, the gorilla is really a harmless, shy, good-natured animal.

Unfortunately the mountain gorilla has a face that only a mother could love.

1920s was not quite the well-behaved character most of us are familiar with today," says Christopher Finch. He is author of the book *The Art of Walt Disney*. Mickey "was mischievous to say the least." And, if you take a look at an early drawing of Mickey, you'll see that he looked more like a real rodent.

As the years passed and Mickey became more of a nice guy, his appearance began to change. Guess what? Mickey started to take on "cute" features. Mickey's head became larger, his eyes became more round and his body seemed softer.

Frank Thomas, an artist who worked for Walt Disney for many years, told CONTACT how to make any cartoon character cuter: "First you make the character soft, with round ears like a bear cub or floppy ears like a puppy. Then you just follow the design of a baby, with large eyes and a large forehead."

Mr. Thomas claims there was no "master plan" for changing Mickey's appearance over

# Factoids



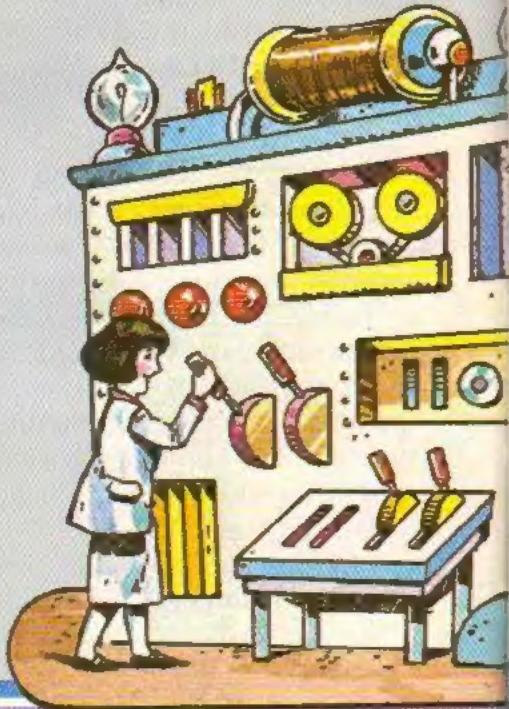
Last year, the average American ate 106.5 pounds of beef.



An Asiatic elephant is pregnant for 609 days before the calf (baby) is born.



The largest clam ever found weighed  $579\frac{1}{2}$  pounds. It was discovered off the coast of Australia in 1917.

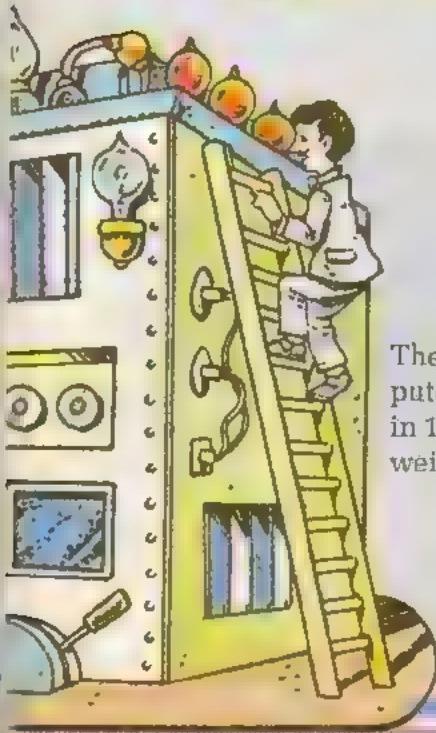
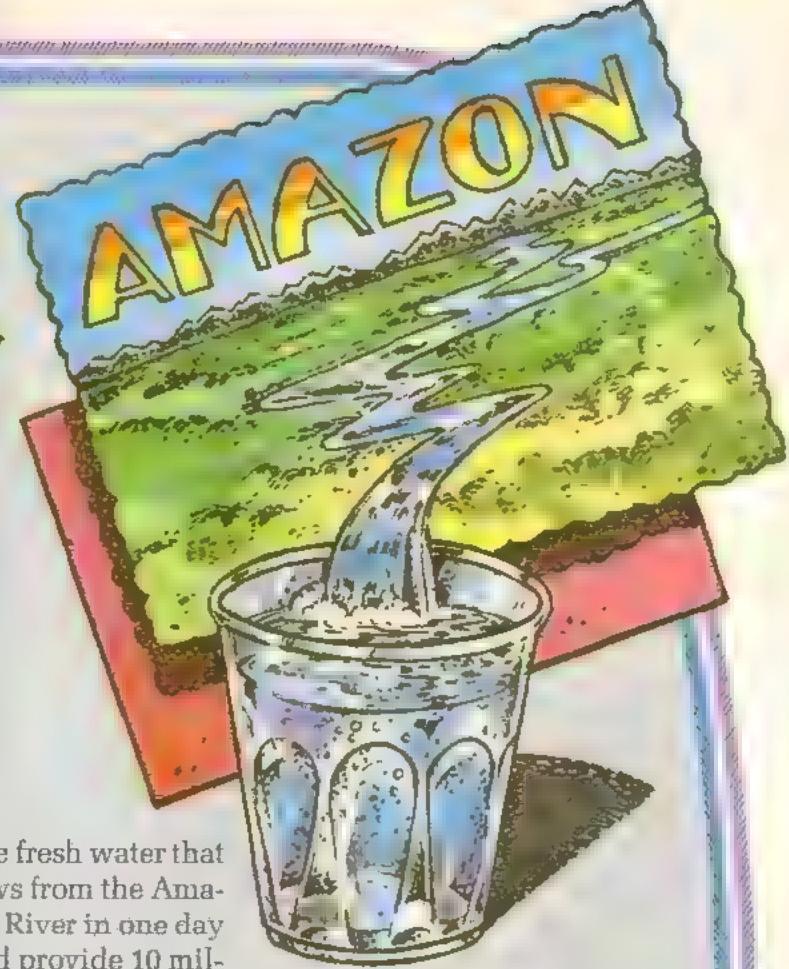




A coconut crab cracks coconuts by dropping them off a tree.



The fresh water that flows from the Amazon River in one day could provide 10 million people with water for nine years.



The first computer was built in 1946. It weighed 30 tons.



# **GET READY FOR AN INCREDIBLE SIGHT**

# *The Return of Halley's Comet*

(Editor's Note: As you read this story, you will see some words in dark type. These words will help you solve The Bloodhound Gang mystery that follows.)

Over 2,000 years ago, an astronomer in China saw an amazing sight. Something that looked like a line of light was stretched across the sky.

That was in **240 B.C.**, but you can see that same strange light today. And you don't need a time machine to do it. Why not? Because that "light" was Halley's comet.

In December, and again in March and April, you'll have a once-in-a-lifetime chance to see this famous space visitor. Halley won't be as bright as it has been on other visits. But skygazers will get to see the very same comet that caused wonder, fear and amazement in people who lived long, long ago.

## **The Mysterious Comet**

For these people, comets were mysterious, frightening objects. The Chinese thought a comet's long tail looked like a broom handle. So they called them "**broom stars**." The ancient Greeks called them "**hairy stars**." To them, the tail looked like hair. (The Greek word for hair is *kometes*, which is how comets got their name.)

People gave comets credit for doing some incredible things. For example, in **1066**, Halley's comet made an especially dazzling appearance. At the time, people blamed the comet for the Norman invasion of England.

## **A Regular Visitor**

Over the centuries, Halley's comet has been seen many times. But each time it arrived, people thought it was a brand new comet, not an old visitor. Then in 1682, Edmund Halley—an

## **Halley Through History**



240 B.C. The first record of Halley.

66 A.D. Emperor Nero survives Halley.



astronomer who lived in England—saw the streaking light. He thought that it was suspiciously like three other comets that had been seen in 1456, 1531, and 1607.

Halley's friend, **Sir Isaac Newton**, had just come up with his ideas about gravity. Halley used these theories to study the comet. He decided that the 1682 comet was the same as the one seen in earlier years. He said that the comet traveled in a long orbit around the sun and that it came by the Earth about every 76 years. Halley predicted that it would be seen again in 1758.

Halley died in 1742. Sixteen years later, people around the world watched the skies to see if he had been right. Finally on Christmas night, 1758, an astronomer in Germany spotted the glowing ball. Halley had been proven correct! Ever since then, the comet has been called "Halley's" comet.

### Flying Dirty Snowballs

Even after Halley's discovery, people continued to be frightened by comets. In 1910, when it was last seen, many were convinced that the world would be destroyed by poison gases in the comet's tail. Some bought special "comet pills" to protect themselves. Others had "comet parties" to celebrate their last days on the planet.

Of course, today, people know comets are nothing to be afraid of. There are hundreds ➤

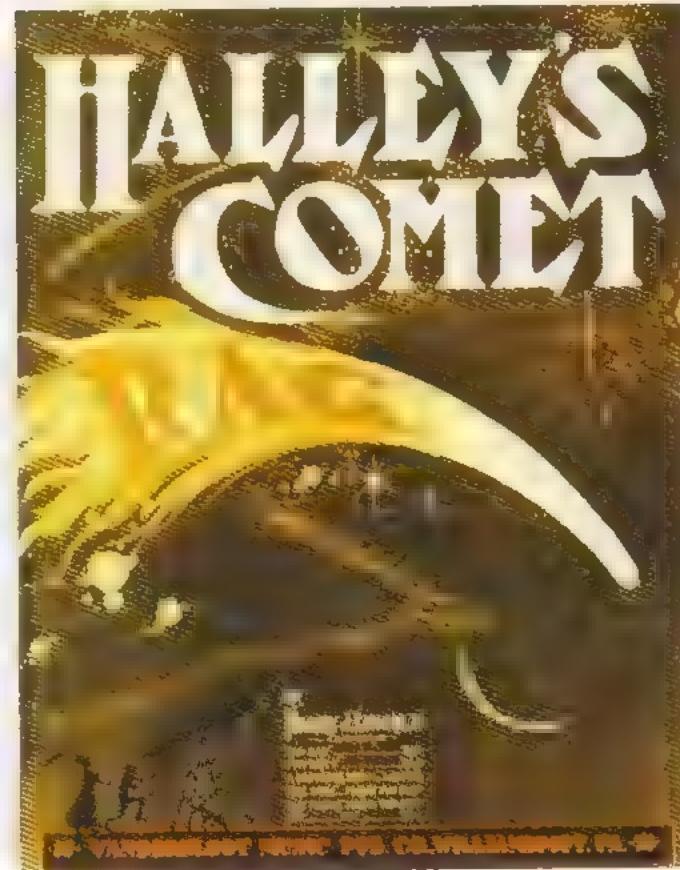


451 A.D. Attila the Hun is defeated.



**Left:** This cartoon appeared in 1857 and predicted a comet would destroy the Earth.

**Below:** Many people have tried to make money from Halley's comet. This song was sold in 1910.



of comets in our solar system. Scientists think these space travelers are chunks of ice with bits of snow and dust inside. Each one is no more than a few miles across.

But even though comets aren't very big, they travel very far. On every trip around the sun, Halley's comet travels over 6 billion miles! Most of the time it is out of sight, traveling beyond the planet Neptune. As it gets closer to the sun, it speeds up. The center chunk of snow, called the nucleus, begins to evaporate. This creates a glowing cloud of water and dust called the coma (KOH-ma).

The tail of the comet is created when the coma is hit by atomic particles streaming out from the sun (the solar wind). The solar wind stretches the coma out into a tail that may be 100 million miles long!

Comets leave behind clouds of dust. When the



1682 Edmond Halley sees the comet.

1758 The comet returns as Halley predicted.

Earth passes through one of these clouds, bits of dust burn up in the atmosphere. When you see shooting stars at night, often what you are looking at is a tiny piece of comet burning up!

### Comet Watching

If you're lucky—and viewing conditions are just right—you'll be able to see Halley's comet from around December 20 to January 25. Then it will disappear behind the sun. But wait! In March and April you'll get an even better view. The best time will be around April 15th. That's when the comet will come closest to Earth as it starts its long trip back out into the solar system.

How can you see Halley's comet? You won't need any special equipment but a pair of binoculars will help. In December you'll have to look right after sundown. In the spring, you'll have to get up very early—about an hour-and-a-half before sunrise! (For where to look, see our charts.) One thing is certain. It will be almost impossible to see the comet if you are near a big city. Cities give off so much light that even big observatories have trouble spotting objects in the sky.

So your best chance of seeing the comet is to get out into the country. You'll also have a better view if you live in the southern part of the U.S. The luckiest people are those who live in South America. That's where the comet will be brightest and most visible.

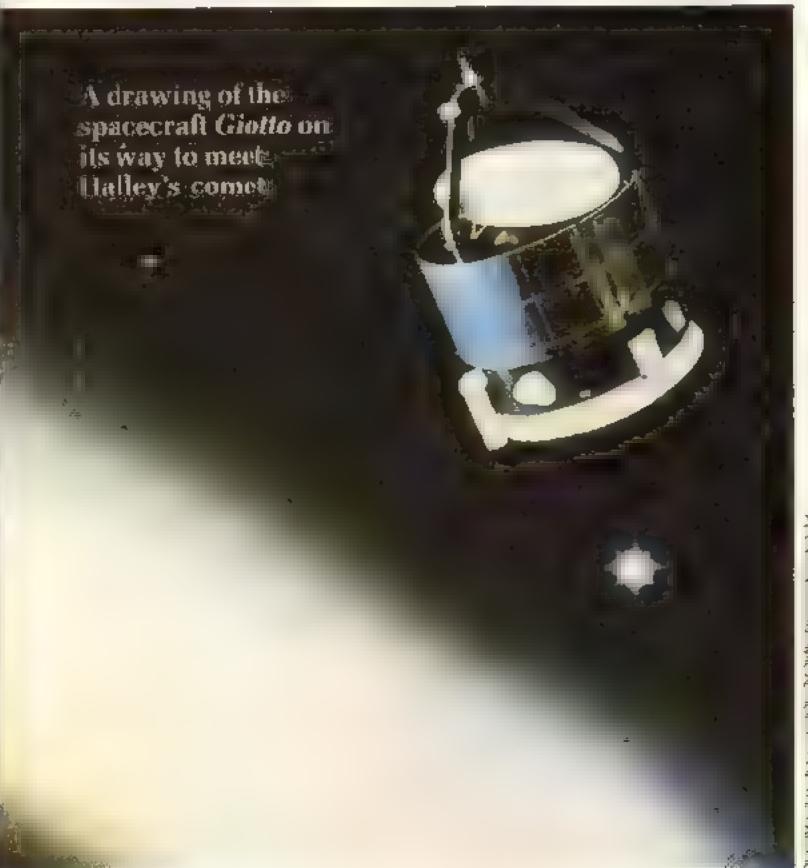


**Above:** Part of Halley's orbit around the sun. The tail of the comet always points away from the sun.

While you're watching down here, five different space probes will be flying to meet Halley's comet. The largest was launched by 11 countries in Europe. It is called Giotto and it will send back pictures and measurements of Halley. The craft will fly so close to the comet that it will probably be destroyed by dust and rocks. Besides Europe's craft, the Soviet Union and Japan have each launched their own comet-watching spacecraft. ➤



Scientists can't predict how much of a show Halley will put on this time. No one knows exactly how much dust it will give off, or how bright its tail will be. But no matter, Halley's comet is something you shouldn't miss. Remember, it won't be back until 2061!



A drawing of the  
spacecraft *Giotto* on  
its way to meet  
Halley's comet.

# How to

Use the charts on the next page to help you find the comet. First, find out which way is north. Use a map, or find the north star. Then turn to face the direction in the middle of the chart (southeast or southwest).

Find the date on the chart that is closest to the date you are looking for the comet. The chart shows you the approximate position of Halley's comet in the sky. The bottom of the chart is the horizon. The top is directly overhead. (The horizon is always at eye level.)

Halley may not be easy to spot. You won't be able to see it move. Most of the time it will just be a bright blur. Find the general area and look carefully. If you don't see anything, try using binoculars. And remember—when you go out at night or before dawn, always go with an adult.

Good luck—and happy comet viewing!

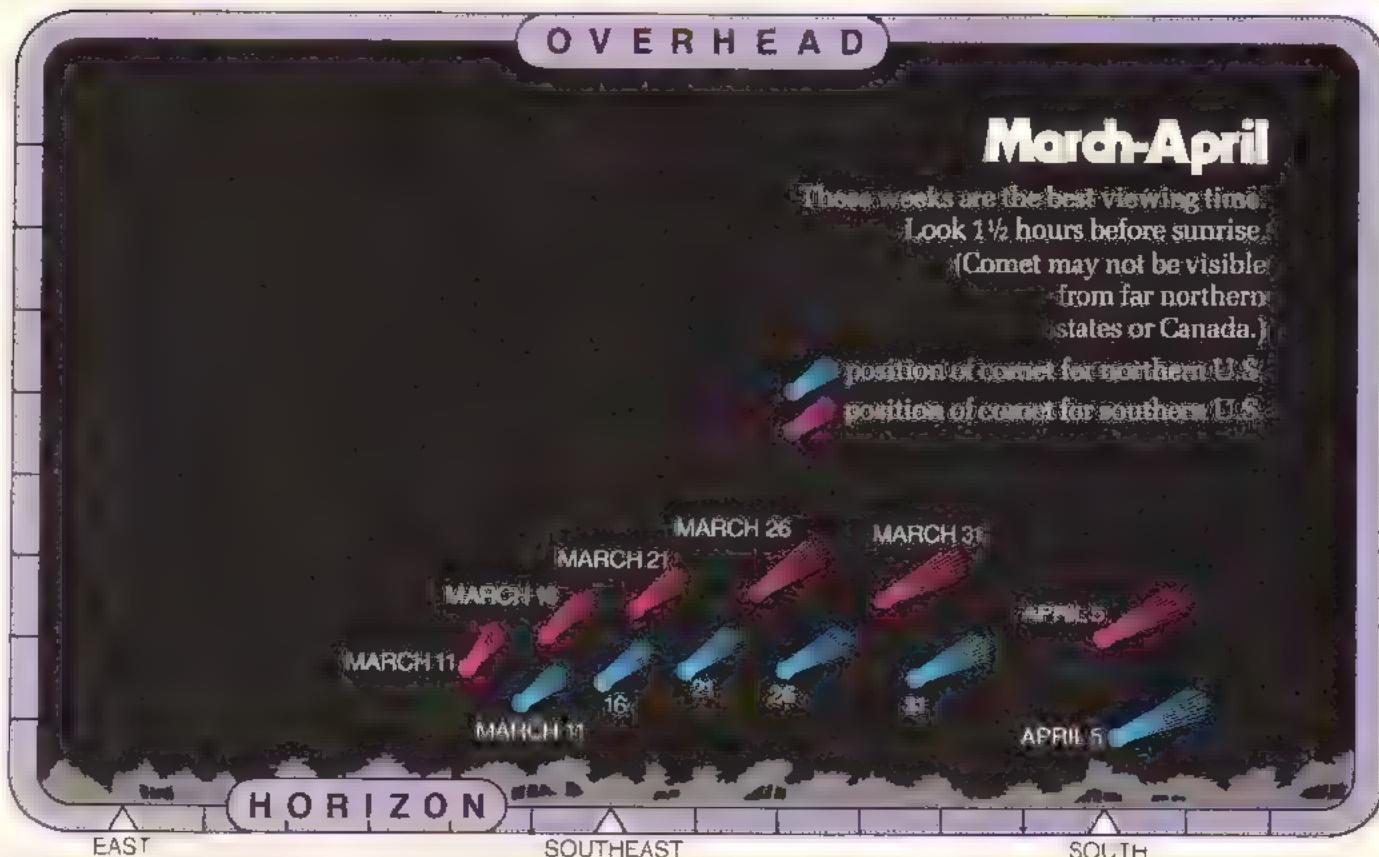
ILLUSTRATION © BOB DELHO



1986 Five spacecraft are sent to meet Halley.

2061 The next visit by Halley's comet.

# Find Halley's Comet



# THE BLOODHOUND GANG

## The Case of the Missing Meteor



L. U. P. H. A. - MS. BY R. B. F.

"Hi, Skip!" Vikki threw her books on the desk. It was three o'clock and she had just come from school.

Skip was sitting in a chair with his face buried in a magazine. He didn't say anything.

"Earth to Skip, come in Skip," Vikki said.

Skip didn't move.

"SKIP!"

Skip looked up. "Oh, hi, Vikki," he said.

"Were you in outer space?" asked Vikki.

"Kind of," Skip said. "I was reading this issue of 3-2-1 CONTACT. It's all about..."

Just then Ricardo burst into the office.

"Hey gang, you'll never believe what just happened!" he said. "I hope you're both ready to help solve a case, because we've got a doozy."

### The Missing Mr. Meteor

Ricardo took a newspaper from under his arm. "Did you see today's headline?" he asked. It said, "MISSING METEOR MILLIONS." Ricardo started reading.

"Police are still searching for Manny Meteor, the oddball millionaire who disappeared yesterday. Mr. Meteor, age 74, was last seen leaving his apartment in the Galaxy Tower.

"Described by his neighbors as 'a weirdo', Mr. Meteor is reported to have left a puzzle which, if solved, will lead to a fabulous treasure worth millions."

"Wow," said Skip, "I've heard of that guy. He made a fortune by inventing Comet brand bubble gum — the gum that glows in the dark."

"Yeah, it makes your teeth fall out like shooting stars," joked Vikki. "What's the case, Ricardo?"

"It's simple," he said. "I think the Bloodhound Gang should solve the puzzle and find Mr. Meteor's missing millions."

### The Comet's Tail Trail

The Bloodhound Gang locked up their office and took the bus to the Galaxy Tower. A tall man stood right in front of the big glass doors. "Hey there's Detective Trowbridge!" said Vikki.

The detective smiled. "Hi kids. I was wondering when you'd show up."

"You know us, Detective," said Ricardo. "No case is too big and no case is too small."

"Yeah, and no treasure is too small," said Skip.

"I thought so," said the police officer. "Well, you better go upstairs."

"This is some apartment!" said Ricardo when the elevator doors opened.

"Apartment?" said Vikki. "It's more like a planetarium."

The walls were covered with photos of the stars, planets, and comets. Out on the terrace stood four different telescopes.

"Yeah, Mr. Meteor was really interested in astronomy," said Detective Trowbridge.

"Are there any clues as to why Mr. Meteor

disappeared?" asked Ricardo.

"No, not really. His friends say he's been acting strange lately. He was staring at the sky a lot. They think he may have been upset because he was going to be 75 next month. The day before he disappeared, he told everyone to call him Edmond."

"Why Edmond?" asked Vikki.

"Beats me. Anyway, the only other clue is the puzzle."

"Now we're getting somewhere," said Ricardo. "Let's see it."

## The Puzzle

Detective Trowbridge handed Ricardo a large sheet of paper. Here's what it said:

1) Go to the street with my friend's last name on it. Don't sit under any apple trees! They follow the laws of gravity. The street's name is

2) Now you need an address. Start with the year I was proven correct \_\_\_\_\_. Then subtract the year when a comet was blamed for an invasion \_\_\_\_\_. The answer is a number you'll need \_\_\_\_\_.

3) Where to start? You're close to the nucleus of the problem. You're getting warm if it's cold. And by the way, people put this in their drinks to keep them cool. It's \_\_\_\_\_.

4) So far, you've made a clean sweep. Don't grasp at straws, but remember what some ancient Chinese astronomers thought they saw in the sky. It's a \_\_\_\_\_. Just look for it.

5) Now you're at the right spot. You're about to make history, and you don't have to go to China to do it! Just measure off the right number of feet. It's the year when a visitor was first recorded. \_\_\_\_\_.

"What kind of puzzle is that?" asked Vikki. "It doesn't make any sense."

"Oh, yes it does."

They all turned to look at Skip.

"What do you mean, Skip?" asked Vikki.

"I mean, I've already solved it," he said, "thanks to this issue of CONTACT I've been reading. And what's more, I think I can tell you where Mr. Meteor is."

**STOP! Before you find out how Skip solved the puzzle, see if you can solve it yourself! All the answers to the clues can be found in the article**

on Halley's comet that starts on page 10. (Clues are in dark type.) When you've filled in all the blanks, read on for the solution.

## Did Skip Solve the Puzzle?

Thirty minutes later, the Bloodhound Gang and Detective Trowbridge were standing on a quiet, tree-lined street.

"Well, Skip, I don't see any treasure, just an old, broken-down house" said Ricardo.

"Well, this is the place."

"How can you be so sure?" asked Detective Trowbridge.

"It's simple," said Skip. "The first clue was that Mr. Meteor is an astronomy nut. Not only that, but he seemed especially fond of comets. Of course, once I knew he was 75 years old, his love of comets made sense."



"Huh?" said Ricardo.

"Seventy-five years ago," said Skip, "there was a giant event in astronomy. And that event is about to happen again."

"Halley's comet!" exclaimed Detective Trowbridge.

Skip grinned. "That's right. Which explains why Mr. Meteor told his friends to call him Edmond."

"After Edmond Halley," said Vikki.

"Now you're getting it," said Skip. "Every question is really about Halley's comet. Start with question number one. Who was Halley's famous friend—Isaac Newton. And where are we standing?"

"On Newton Street," said Vikki.

"That's right. The year Halley was proven correct was 1758, when the comet returned as he predicted. From that I subtracted 1066, the year of the famous invasion of England. The comet was seen then, too. So, the answer is ..."

"692!" said Detective Trowbridge. "We're at 692 Newton Street." ►

Skip led them inside. No one had lived in the old house for a long time. The floor was covered with dust.

"Well, Skip," said Vikki, "what next?"

"I'm not sure," Skip said. "We have to find something that makes ice—maybe a refrigerator."

"Ice?" asked Ricardo. "Oh, I get it, the nucleus of a comet is made of ice!"

"You know," said Detective Trowbridge, "a lot of these old mansions had ice houses in back."

## A Treasure Indeed

Faster than you could say Halley's comet, the Gang was standing in front of the old ice house. There was a large field behind it.

"Now," Skip said, "I think we should look for a broom."

"Look, Skip," said Detective Trowbridge, "I know this place is dusty, but we didn't come here to clean up."



"No, we need the broom to find the treasure. Remember the clue mentioned a clean sweep? Well, the ancient Chinese astronomers called comets broom-stars."

"Here's a broom!" called Ricardo from behind the ice house.

"Don't touch it!" yelled Skip. They all walked to the back of the ice house.

"Okay, Ricardo, let's measure off 240 feet starting from where you found the broom. That should be where the treasure is."

"I'm almost afraid to ask," said Vikki, "but why 240 feet?"

Skip started walking into the field. "Because 240 B.C. is the date of the first recorded sighting of Halley's comet."

They followed Skip into the field.

"...238, 239, 240! This is it!" he yelled.

"I hope so," said Ricardo, "It's getting dark."

"There's nothing here but a big rock," said

Vikki.

"Let's see what's underneath," said Detective Trowbridge. He rolled the stone over. In the dim light they could make out a steel box lying in a hole.

"That's it!" yelled Skip. "The treasure!"

"I wonder what it is," said Vikki.

"Maybe it's jewels," said Ricardo.

"Or gold!" said Skip.

"Or a piece of paper," said Detective Trowbridge as he opened the box.

"A piece of paper?" the gang shouted.

Detective Trowbridge laughed. "That's right," he said taking the paper out of the box. "My friends, you are now the proud owners of a deed to Halley's comet."

"A deed to Halley's comet?"

"I guess this is Mr. Meteor's idea of a joke," said the detective. "After all, no one can own a comet."

"Is that all there is?" asked Chip.

"No," said Trowbridge, "there's something else here—a pair of binoculars."

"Well, we're out here anyway," said Vikki. "We might as well watch 'our' comet."

"Skip, there's just one more thing," said Detective Trowbridge. "You said you could tell us where Mr. Meteor is."

"Oh that," said Skip. He looked very disappointed. "He's in South America."

"South America?"

"Sure, to get a better view of the comet."

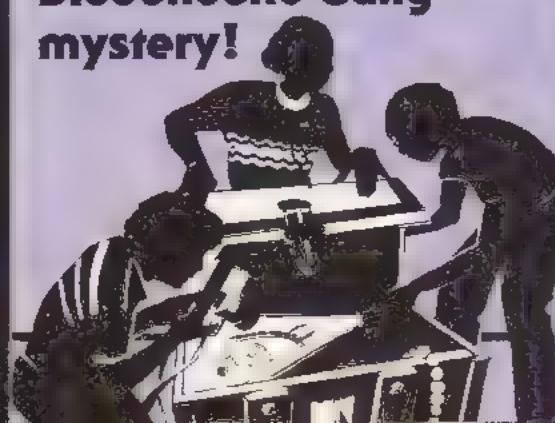
"You mean our comet," said Ricardo.

"Don't feel bad, Skip," said Vikki.

"Yeah, you'll have better luck next time," said Detective Trowbridge."

"That's just it," moaned Skip. "The next time won't be until 2061!"

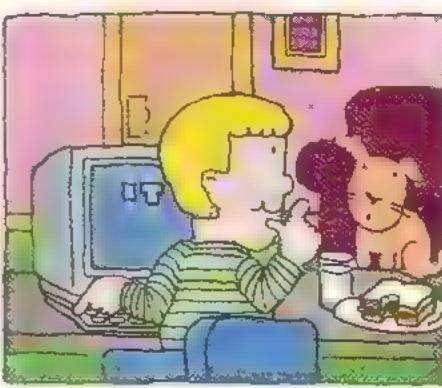
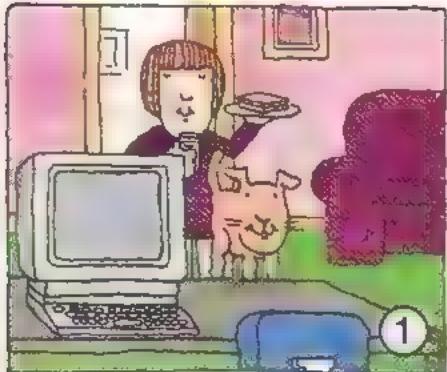
**Watch for next month's  
Bloodhound Gang  
mystery!**



## A Sneaky Snack

Someone (or something) in this comic strip ate the girl's sandwich. Can you figure out who the sandwich snatcher is? Right now, the pictures in the comic are all mixed

up. All you have to do is put the pictures in the right order. We've numbered the first one for you. See the Did It? page for the answer.



# newsbeat

**3-2-1 CONTACT** reporter Phil Wiswell visited the Consumer Electronics Show (CES) in Chicago. The show is the biggest computer show in the U.S. Some 100,000 people were there. At CES, Phil got a sneak preview of the very latest computer hardware and software. Here's his report.

The hardware and software I saw were the best ever. But there just wasn't as much new hardware and software as in the past. It seems that companies are programming for the Commodore 64 and 128, the Apple II, the Macintosh, and the IBM PCs. Some products are being made for the new Atari machines, but there isn't much available for the old ones.

**Hearty Hardware:** The hard news about hardware came from Commodore. They showed the C-128, a 128K home computer that can be expanded up to 512K.



You can use all your C-64 software on this new machine. And software companies have already started writing new programs for the C 128's more powerful memory.

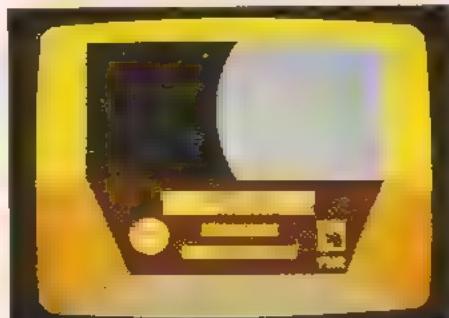
The soft news from Commodore was the Amiga computer. This machine is supposedly as good as—or better than—Apple's Macintosh, but costs a lot less. The Amiga

should be in the stores by the time you read this. It may turn out to be a very important computer.

Speaking of Apple Macintosh look-alikes, Atari demonstrated its new XE and ST computers. These machines, which imitate the Mac, might be out by the holiday season. The real news from Atari was the new CD ROM Drive. This uses compact disc technology to store up to 1,100 floppy disks worth of information on your computer. The disc shown by Atari held an entire encyclopedia, including all pictures and diagrams. The one problem: As you may know, ROM stands for Read-Only Memory. That means you can call up the information on your computer screen, but you can't add to it or change it in any way. Still, it's easier than trying to store 1,100 floppy disks.

**Sizzling Software:** On the floppy disk front, here's some of the top new software.

Mindscape Software has several new adventure game titles on view, including *A View to a Kill*, based on the hit James Bond movie, and *Dolphin's Rune*, an adventure action game that teaches users tons about being a dolphin, and *The Halley Project*, an adventure that sends you off in search of the famous comet.



Spinnaker Software wants to take you through the looking glass with

their Alice in Wonderland adventure game. Then you can step into the courtroom as you become the famous lawyer Perry Mason in *The Case of the Mandarin Murder*. Stepping back into the classroom, Spinnaker has two *Homework Helpers* to improve your skills in *Math Word Problems* and *Writing*. And when you sit down to write, there's Spinnaker's *Better Word Processor*, a word processing program with a built-in 50,000 word dictionary.

Broderbund Software's *Fantavision* lets you create animated special effects, and their *Science Toolkit* turns your computer into a science project. On a less serious note, there's *Captain Goodnight*—



an action game that turns you into a "defender of freedom, champion of justice and all-around good guy."

Still in an adventurous mood? Sierra Software's got *Gato*, a submarine simulation. Sierra also announced that it will create a computer adventure game based on the animated Disney movie, *The Black Cauldron*.

Finally, from Activision, some innovative new software packages: *There's Someone Living Inside My Computer*. No, we're not loony. That's the name of new software that turns your computer into a place where wee creatures can live. You can even get one of these unusual individuals to sit down and play the piano for you.

# The Slipped Disk Show



ILLUSTRATION BY RONALD MCKEE

Hi there fans, it's time once again for the king of the keyboards, the chief of the microchips, the power-house of programming, that's right, it's time for—Slipped Disk, the floppy disk jockey! So get set, 'cause I'm coming at you with another crazy collection of kooky computer questions.

Speaking of kooky, our first question is so far out, it's in orbit! **Juan Suero**, of New York City, asks:

**"Do you have to know how to use computers to be an astronaut?"**

Juan, nowadays there are computers in everything. There are computers in cars, in refrigerators—yesterday there was even a computer in my soup! Anyway, there are several computers in the space shuttle and every astronaut has to know how to use them. But that doesn't mean you have to be an expert hacker to be an astronaut. Some astronauts are computer experts, but others are scientists, teachers, or even U.S. senators!

When we talked to shuttle astronaut Anna Fisher, she told us, "There are only two computer wizards among the shuttle astronauts. The rest of us are computer users. We don't understand why the computer does what it does, we just know how to make it work for us."

So I'm sorry, Juan, but playing "Space Invaders" will not help you get a job with NASA.

Next we have a really hair-raising question from **Ruth Theodore**, of Salt Lake City, Utah. Ruth asks:

**"Do you think computers will ever become hairdressers and how are they used by hairdressers now?"**

Ruth, let's not split hairs. I'll get right to the root of your question. Computers are already being used to help people look more beautiful. One cosmetic company has developed a computer make-over program. It allows you to "apply" make-up to a video picture of your face. Then you can see what you would look like in a certain shade of lipstick, eyeshadow, etc.

There is also a computer program that does the same thing for hairstyles. It combines a picture of your face with any hairstyle you want. You can see how you would look without cutting a single hair!

But will computers ever be hairdressers? Only if someone can write a program that makes them good gossips (only kidding all you hairdressers out there!).

Speaking of gossip, I heard this question the other day from **Rafi Mednick**, of Larchmont, New York:

**"Why do you have to use a monitor for word processing? Why can't you use a television set like you do for games?"**

Rafi, you don't **have** to use a monitor for word processing. However, if you are going to do a lot of writing with your computer, you probably should use a monitor.

TV sets are fine for displaying pictures but they don't do such a good job on words. If you use a television for a lot of word processing, you might get eye strain.

Monitors are much better for displaying lots of words. They can produce much sharper letters that are easier to read. But only expensive monitors have color.

Well, my monitor is looking kind of dim right now, and I have an appointment with my robot hairdresser. So I guess it's time to say goodbye. Remember, if you have any computer questions (or any answers!) you can send them to:

**The Slipped Disk Show  
3-2-1 CONTACT Magazine  
1 Lincoln Plaza  
New York, NY 10023**

This is Slipped Disk, the floppy disk jockey, signing off.

Slipped Disk's vocabulary supplied by Richard Chevat in return for a promotional consideration.

# REVIEWS

by Phil Wiswell and Bill Gillette

## Wishbringer

Infocom; most home computers; \$40

You play the part of a postal clerk in Wishbringer. As you try to deliver a sealed letter to Ye Olde Magic Shoppe you get caught up in an amazing magical fantasy.



This game is excellent for beginners who have never played adventure games before. At the same time, it's tough enough to challenge most players who are old hands at adventure games. The puzzles you solve in Wishbringer force you to use common sense. For instance, at one point the storekeeper gives you a trick can of peanuts. Soon afterward, you must get around an evil troll. Offer the troll this trick can and you're sure to get by.

As usual, Infocom has included items in its package to make the game more fun to play. They include a map of the town, a magic rock that glows in the dark and, of course, the letter you must deliver to Ye Olde Magic Shoppe.

Wishbringer also has a special feature that lets you get out of any jam. You can solve the puzzles on your own. Or, if you get stuck, you can wish the problem away with the magic stone.

### Wrap-Up

**Bill:** This is one of the very best games for a first-time adventurer. **Phil:** I thought I could solve this adventure quickly. But I've already used four wishes and I still haven't finished. It's definitely not too easy.

## Road Rally U.S.A.

Bantam; IBM PC & PCjr, Apple II, Commodore 64; \$30-40

In Road Rally U.S.A. you do more than steer a car—you race your way across the U.S.A. The playing screen is based on a real map of U.S. highways. This makes the game educational and fun.

The computer first selects two cities—such as Chicago and Philadelphia. It then challenges you to select the shortest, fastest route between these points. As your car moves through the game, the map reveals the next section of road. What's that up ahead? A snow-storm? A tornado? A washed-out bridge? Obstacles will force you to rethink your driving as you go.



### Wrap-Up

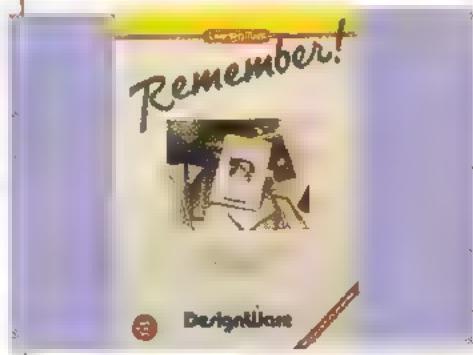
**Phil:** I like the way this game involves different skills—from map reading to split-second decision making.

**Bill:** It's fun to play even as just a regular driving game.

## Remember

Designware; Apple II, IBM PC & PCjr, Commodore 64

The title Remember makes this sound like another memory and concentration game. But it's not a game at all. It's a study aid that helps you memorize anything.



Designware

Here's how it works: You start by gathering a list of questions and answers. This list can be made up of anything from foreign language words and their meaning to parts of the human body. The questions can be three lines long. The answers are limited to one line. Remember also features a graphics editor that lets you draw pictures to go with each question, and a music editor that lets you add sound effects. The music editor works fine, but the graphics editor is not easy to use.

Once you've entered your list of questions and answers, music and pictures, the program will quiz you until you've mastered all the information.

### Wrap-Up

**Bill:** I don't think you need the graphics and music in this soft-

ware. But without them, Remem-  
ber doesn't offer anything you  
couldn't do with a pencil and  
paper.

**Phil:** I disagree. I think this soft-  
ware really helps you test yourself.  
That's tough to do with just a pen-  
cil and paper.

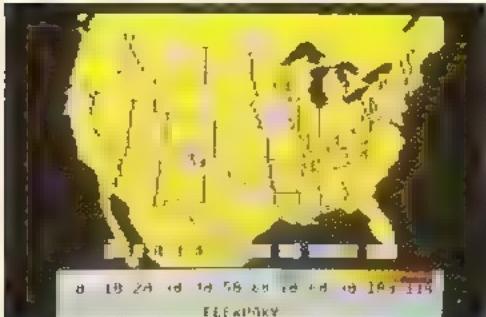
## Weather Tamers

CBS Software; Commodore 64; \$39.95

Did you ever wish you could control and predict the weather? Well, *Weather Tamers* gives up to four players the chance to do just that. It's a fun game that teaches you about weather patterns and about problem solving.

The screen shows a weather map of the U.S., including rain, snow, temperature zones and high and low pressure areas. A player may call up data from his or her weather satellite and change the temperature, humidity, wind and air pressure in any area of the country.

Why change the weather? Because during the game you get calls from clients requesting specific weather for specific parts of the country. For example, skiers in



Utah might ask for snow while the folks in Miami want sunny skies. The more people you keep happy with their weather, the more points you score.

### Wrap-Up

**Bill:** This program lets you learn

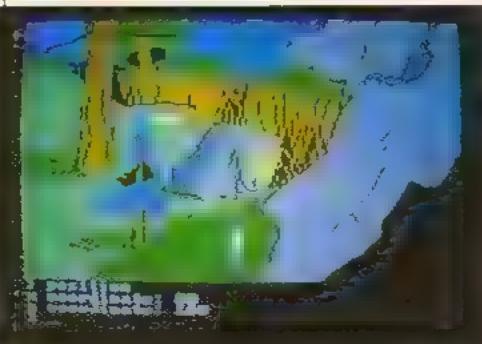
by experimenting with the weather. At the same time, it's fun to play—almost like an arcade game.

**Phil:** I offer this tip for future weather tamers: Watch your wind direction and air speed.

## King's Quest: Romancing the Throne

Sierra, IBM PC & II, Apple II; \$49.95

This is a follow-up to *King's Quest*, the first animated adventure game. This game has more characters to meet and even better pictures and animation.



The object of this game is to locate the magic keys and unlock three doors that lead to the enchanted land. There are knights and swords and other medieval trappings. But remember, you'll get farther faster if you don't fight.

This software lets you move characters around the screen with a joystick, and type in full sentence commands. This makes *King's Quest: Romancing the Throne* play like an animated cartoon.

### Wrap-Up

**Bill:** This follow-up to *King's Quest* is even better than the original game.

**Phil:** It's better and tougher to play. So here's a hint: Think like a fish.



## The Complete Computer Fireworks Celebration Kit

Activision; Commodore 64 & 128;  
\$29.95

This is a computer construction set that lets you create video greeting cards. You create the fireworks displays and text and music. Then you combine them into a show that can last for several minutes.

Begin by choosing one of a half dozen settings for your celebration—a battleship, the Brooklyn Bridge, an amusement park and so forth. Then create a sequence of different kinds of fireworks. You decide how high they go, how long they last, how bright they shine and how loud a noise they make. Music, text messages and special effects make the displays even more exciting.

When you're done, you can save the fireworks display on a blank disk. You don't need the program to replay the design. That means your display can be viewed by anyone with a Commodore 64.

### Wrap-Up

**Phil:** The joystick makes it easy to control all the factors in this software. Every fireworks display is a custom-made work of art.

**Bill:** That means you can use this software to celebrate any event—from Groundhog Day to Mom's raise at the office.

# basic TRAINING

PROGRAMS FOR YOUR COMPUTER



## Code Guess

**Commodore 16 and 64, Apple, IBM,  
VIC 20**

This is a game of Twenty Questions—but the answer isn't animal, vegetable or mineral. The aim of this game is to guess a three letter code.

Your computer will give you a hint after each guess. If it says "too high," that means your guess comes after the code in alphabetical order. If the computer says "too low," then your guess would come before the code. For example, if the code is BLT and you guess ABC, the computer will say "too low."

The computer picks a new code in lines 20 through 50. It checks your guess in lines 110 through 130. You can make the game harder by giving the player fewer guesses. Just change line 80.

Code Guess was written by **Doug Krehbiel**, 17, of New York City. The program is written for Commodore and VIC-20 computers. To adapt it

to Apple and IBM machines, follow these instructions:

For Apple, replace line 10 with:  
10 HOME

For IBM, replace line 10 with:  
10 CLS

```

10 PRINT CHR$(147)
20 FOR J = 1 TO 3
30 I = INT(RND(1) * 26) + 65
40 VS = VS + CHR$(I)
50 NEXT J
60 PRINT "I'M THINKING OF"
70 PRINT "THREE LETTERS"
80 FOR N = 1 TO 20
90 PRINT PRINT GUESS NO ' N
100 INPUT Y$
110 IF Y$ < VS THEN PRINT "TOO"
120 IF Y$ > VS THEN PRINT "TOO"
130 IF Y$ = VS THEN GOTO 170
140 NEXT N
150 PRINT "SORRY IT WAS ".VS
160 GOTO 180
170 PRINT "CORRECT!"
180 PRINT "PLAY AGAIN? (Y/N)"
190 INPUT MS
200 IF MS = "Y" THEN RUN

```

## Bounce

**TI 99 4A**

We think you'll flip over this program. In fact, you'll have a ball. To create your very own bouncing ball, pick a number between 1 and 7 for the ball color and another number between 1 and 7 for the screen color. To change the way the ball bounces, try changing the numbers in lines 90 through 120.

Bounce was dropped on us by **Michael Thomas**, 13, of Paducah, Kentucky. Ready to bounce? Then hop to it!

```

10 REM BOUNCE
20 CALL CLEAR
30 CALL
40 CHAR(96,
50 '3C7EFFFFFFF7E3C ')
40 INPUT "BALL COLOR?" C
50 INPUT "SCREEN COLOR?" S
60 CALL CLEAR
70 CALL COLOR(9 C S)
80 CALL COLOR(1 S S)
90 X 16
100 Y 12
110 XDIR = 1
120 YDIR = 1
130 X X + XDIR
140 Y Y + YDIR
150 IF X < 1 THEN 220
160 IF X > 32 THEN 220
170 IF Y < 1 THEN 270
180 IF Y > 24 THEN 270
190 CALL CLEAR
200 CALL HCHAR(YX,96)
210 GOTO 130
220 XDIR = - XDIR
230 CALL SOUND(30,380,2)
240 IF Y < 1 THEN 270
250 IF Y > 24 THEN 270
260 GOTO 130
270 YDIR = - YDIR
280 CALL SOUND(30,380,2)
290 GOTO 130

```

## Quick Eye

### Apple

All you need to play Quick Eye is an Apple computer and a—uh—quick eye. In this game your computer lights up a string of numbers from 1 to 9. Watch carefully, because to win you have to remember which number was lit up last.

To make the game harder, lower the number in line 190.

Quick Eye was written in a flash by Brian McMillen of Hialeah, Florida.

```
10 REM QUICK EYE
20 HOME
30 FOR T = 1 TO 300: FLASH
40 VTAB 6. HTAB 16
50 PRINT 'QUICK EYE'
60 NORMAL
70 VTAB 6 HTAB 16
80 PRINT 'QUICK EYE'
90 NEXT T
100 PRINT "LOOK FOR THE
LAST NUMBER LIT UP"
110 FOR T = 1 TO 1200: NEXT T
120 HOME
130 HTAB 6: PRINT "123456789"
140 FOR T = 1 TO 300: NEXT T
150 FOR X = 1 TO 12
160 N = INT(RND(1) * 9) + 1
170 HTAB N + 5: VTAB 1
180 INVERSE: PRINT N
190 FOR T = 1 TO 150: NEXT T
200 HTAB N + 5. VTAB 1
210 NORMAL: PRINT N
```

```
220 NEXT X
230 PRINT : PRINT
240 INPUT "WHAT WAS THE
LAST NUMBER LIT? "; A
250 IF A = N THEN PRINT
"THAT'S RIGHT": GOTO 270
260 PRINT "SORRY, IT WAS ", N
270 INPUT "TRY AGAIN Y/N",
A$
280 IF A$ = "Y" THEN 120
290 PRINT "BYE"
300 END
```



## Computer Symphony

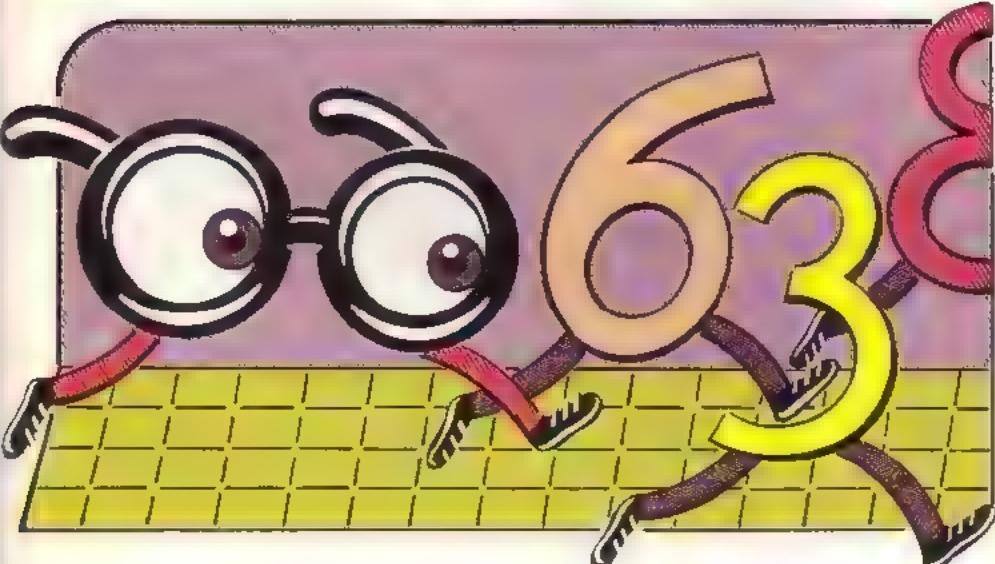
### Atari

You can play a symphony with this program, but don't expect to get into Carnegie Hall. The music your Atari will produce is too weird. Want to hear it? Just type in the program and run it.

There are three "voices" in your orchestra. To change them, hit the Start, Select or Option key on the right hand side of your keyboard. Then use your joystick to raise or lower the note. You can also hold down one of the keys while you move the joystick.

Computer Symphony was written for a song by Doug Krehbiel, 17, of New York City.

```
10 PRINT CHR$(125)
20 PRINT " " COMPUTER
SYMPHONY"
30 DIM K(3)
40 K(1) = 50 K(2) 100 K(3)
150
50 P = PEEK(53279)
60 A = P
70 IF A = 7 THEN 50
80 IF A = 3 THEN A = 4
90 A - A - 3
100 IF A < 0 THEN A = -A
110 X = STICK(0)
120 IF X = 15 THEN 110
130 IF X/2 = INT(X/2) THEN M
= 1 GOTO 150
140 M = 1
150 K(A) = K(A) + (M * X) + M *
INT(RND(0) * 6)
160 IF K(A) < = 0 THEN K(A) = 255
170 FOR T = 1 TO 3 ...
180 SOUND T, K(T), 10.8
190 NEXT T
200 GOTO 60
```



## Send Us Your Programs

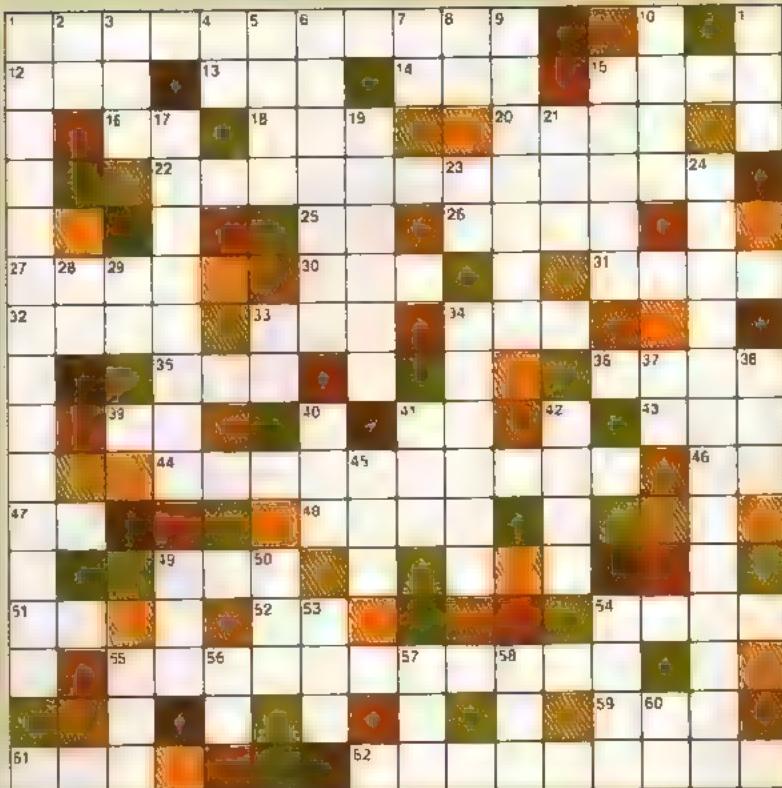
If you've got a neat and nifty program, send it along to us. If we print it, we'll send you \$25. Be sure to include your name, address, age, and what computer your program is for. All programs must be your own. Send programs to: Basic Training

3-2-1 CONTACT  
One Lincoln Plaza  
New York, NY 10023

# CROSSWORD PUZZLE

## ACROSS

- "The Last \_\_\_\_\_"; a movie about a kid who gets into a real space battle
- Automobile
- Also; homophone for two
- Sports equipment used to go down a snowy mountain
- A place to play or go camping
- "\_\_\_\_\_ fi, fo, fum"
- Exclamation of amazement
- High school dance
- Tilted building in Pisa, Italy
- Opposite of out
- Kind of evergreen tree
- Computer or sleep-away
- Last word of a story: "The \_\_\_\_\_"
- 'Rock and \_\_\_\_\_'
- To \_\_\_\_\_ his own; (rhymes with peach)
- East by South East (abbreviation)
- 55 miles \_\_\_\_\_ hour
- Swiss mountain
- These make up a staircase
- Opposite of off
- Internal Revenue (abbreviation)
- Iron \_\_\_\_\_, stuff found in mines (rhymes with more)
- Another name for "Boob tube"
- California (postal abbreviation)
- Homophone for too



- First four vowels
- Rub-a-dub-\_\_\_\_\_
- Oregon (postal abbreviation)
- Appalachian Trail (abbreviation)
- Something you take in school
- TV show about a hi-tech talking car
- Three minus two equals \_\_\_\_\_
- Opposite of night
- Macintoshes and PCs are \_\_\_\_\_

## DOWN

- Stories about the future fall into this category
- Magician's sound:
- Opposite of loser
- Nickname for President Reagan
- General Practitioner (abbreviation)
- Amusement park ride that has its ups and downs
- Automobile Association (abbreviation)
- Master of Ceremonies (abbreviation)
- Extended play record (not quite an LP)
- Human being
- "\_\_\_\_\_ be or not to be..."
- "The Princess and the \_\_\_\_\_"
- Boston \_\_\_\_\_ Party
- Three in Roman numerals
- What people do on election day
- Animal doc
- Nickname for Donald
- Another name for sack
- Often used word
- Running movement a horse makes
- Lock opener
- Intelligence Quotient (abbreviation)
- Rock group: \_\_\_\_\_ Speedwagon
- What you do with your toe to test the water
- North East (abbreviation)

# Letters



CONTACT reader Jennifer Vratil took this photo of a building damaged by a tornado.

## Twirling Tornadoes!

Dear 3-2-1 CONTACT,

I loved your article in your March issue on tornadoes—especially since one hit our house in 1984. It would have destroyed our house but we had our windows open. The house was really saved because tornadoes move in small circles and we were in the middle of it where it's calmer. It missed us by just three feet on one side!

Everything around our house was destroyed—trees uprooted, a three story stone building became  $1\frac{1}{2}$  stories, and the chicken house was in pieces! All of our dogs lived, but a patch of fur was sucked off one of them! It was scary but luckily my family was okay.

Jennifer Vratil  
Limon, CO

Dear Jennifer,

Wow! That doesn't just sound scary. It sounds really scary! Thanks for sharing your story with us. We certainly found it fascinating! And we're glad you, your family and your dogs are okay!

## Mutant Musings

Dear 3-2-1 CONTACT,

I really enjoyed your article about mutants in comics and real life (May 1985 issue). I didn't know that there were square tomatoes. I think that they should sell

them in stores. I love tomatoes in sandwiches, but the round ones are hard to fit in square bread!

If you know anyone who grows square tomatoes, tell them they could probably sell millions of them in stores or drive-ins that sell square sandwiches. At least it's worth a try!

Cheryl Enos  
Holualoa, HI

Dear Cheryl,

What about making round bread for the round tomatoes too? Now, that's a really square idea!

## What Happened to ENTER?

Dear 3-2-1 CONTACT,

I am an ENTER magazine fan and I would like to know why you merged with CONTACT. I liked it the way it was before.

Andrew Ross  
Cohasset, MA

Dear Andrew,

We received many letters from loyal ENTER fans asking the same question. Everyone here hoped ENTER would be around forever. We all loved the magazine. But unfortunately, there were not enough subscribers to make "a go" of it. Of course, we didn't want ENTER to disappear completely. So it's still part of each issue of CONTACT!

## Facing Facts

Dear 3-2-1 CONTACT,

I would like to send some really neat Factoids to you and I'm sure that others would too! I think it would be great if you could put an address in the magazine.

Beth Sanders  
Dixon, MO

Dear Beth,

Why didn't we think of that?  
Send your Factoids to:

**FACTOIDS!**  
P.O. Box 599  
Ridgefield, NJ 07657

There's just one hitch. We need to know where you found your Factoids. We can't wait to hear all your ideas—and that's a fact!

## Lost in the Woods

Dear 3-2-1 CONTACT,

I read your story on orienteering in the May issue. I'd like to know more about it. Where do you go or who do you call?

Laura Koiner  
Manheim, PA

Dear Laura,

Orienteering—using maps to help you race through the woods—is a sport that is becoming more and more popular in the U.S. For more information, write to:

Bob Defer  
U.S. Orienteering Federation  
P.O. Box 1039  
Ballwin, MO 63011

## We Want Mail

Dear Readers,

We really love hearing from you. The questions, ideas and complaints we get help us make CONTACT a better magazine. So why not drop us a line? We can't answer every single letter, but we do read them all. Send your mail to:

3-2-1 CONTACT Letters  
P.O. Box 599  
Ridgefield, NJ 07657

# Holiday Gifts

A CONTACT  
PUZZLE



The last couple of years have been holiday heaven. What was around back then? Some of the items start to look like antiques now. Can you figure out which objects from the past are still around in 1990? And which ones never will? Here's a hint: get your pencils! Then kids, find the hidden message. Now you take it from there. Carefully you'll get your answers. Good luck!

Answers on the Did It! page



# STARWHEEL

## A Map of the Stars

Stargazing can be fun, if you know what you are looking at. But it's hard to tell one star from another on a clear starry night. What you need is a star wheel.

A star wheel is a kind of map of the night sky. You can use it to pick out stars. You can also spot constellations—imaginary pictures formed by the stars. Best of all, you can use your star wheel all year 'round. As the seasons change and the stars in the sky move, your star



wheel moves right along with them!

Use the circle and square below to make a star wheel. Outside on a clear night, you can use it to spot stars and constellations.

Making a star map takes lots of work, but it's worth the effort. If you can, get help on the steps marked with a star.

**What You Need:** cardboard to cover both the circle and the square (oaktag or thin

poster cardboard), pencil, stapler, glue, scissors, paper fastener, paper clips.

### Getting Started

1. Cut out the circle. Then cut out the square.
2. Trace the circle on the poster cardboard. Trace the square next to it. Cut out these two shapes. Now you're ready to put your star wheel together. To find out how, turn to page 34.



# Any Questions?

## Why do your teeth chatter when you are cold?

One of the best ways to keep warm is to jump up and down. When you exercise, your muscles are at work. They produce heat that warms them and the rest of your body.

Your body has a way of keeping warm even when you aren't jumping around. If you go outside on a cold day, your teeth chatter and you shiver. The chattering and shivering are called *reflex actions*. They happen whether you want them to or not. It's your muscles that are doing all that shaking and, once again, this warms you up.

As soon as you are warm, your muscles relax. Your teeth stop chattering until the next time your body sends a message to your muscles. Hey, it's cold. Start shaking!

Question sent in by Cheri Wilson, Rockville, MD.



## How does a rooster know what time it is?

Every morning, right around the time the sun comes up, roosters begin crowing. They are always right on time. You would think they had built-in alarm clocks!

Actually, it's pretty easy waking up at dawn. Have you ever gotten up before your alarm clock? Maybe you left the window shade up and the sunlight woke you up.

That's the way it works with roosters. When it starts getting a little lighter outside, they sense it and wake up. Other animals wake up, too. It's just that the rooster is noisier about it. That's why people hear that UR-UR-UR-URRRRR!

All that crowing isn't really meant to tell anyone the time. Once roosters are awake they keep crowing all day. People think it's a way of attracting female chickens and of telling the other roosters, "Stay outta my territory!"

Question sent in by Erin Wild, Akron, OH.



Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?  
3-2-1 CONTACT  
P.O. Box 599  
Ridgefield, NJ 07657

**Why does milk turn sour?** When milk comes from a cow, it is full of tiny living things. These bacteria are too small to see, but they can ruin milk.

Bacteria use the sugar in milk for food. They don't get fatter as they feed. Instead, more and more bacteria grow. As that happens, they give off a waste called lactic (LAK-tik) acid. It's the acid that turns the milk sour. YUCK!

Before milk goes to the store, it is heated to about 175°F (62°C). This is called pasteurization. It kills most of the bacteria. What little bacteria is left can still grow. To slow it down, you must keep milk in the refrigerator.

Sometimes leaving bacteria in milk isn't such a bad thing. Bacteria makes the protein in milk begin to turn solid. That's how milk is turned into yogurt, sour cream and many cheeses. YUM!

Question sent in by Kay Mowers, Upper Darby, PA.



## Why does your foot fall asleep?

You've been sitting in one position for a long time. Now your foot is all tingly. You feel like a walking pin cushion.

Your foot fell asleep because your blood was having trouble doing its job. You have about four quarts of blood in your body. The blood moves around every minute of every day. This movement is called circulation.

Sometimes when you sit on your leg for a long while, you slow down the circulation. The blood has a hard time moving along, and less blood reaches your foot.

The nerves in your foot send a tingly warning to your brain, asking you to shake a leg. Soon after you do, the blood starts moving easily again. So you see, your foot wasn't asleep at all. It was wide awake—and letting you know it needed help.

Question sent in by Kristina Hakanson, Klamath Falls, OR.



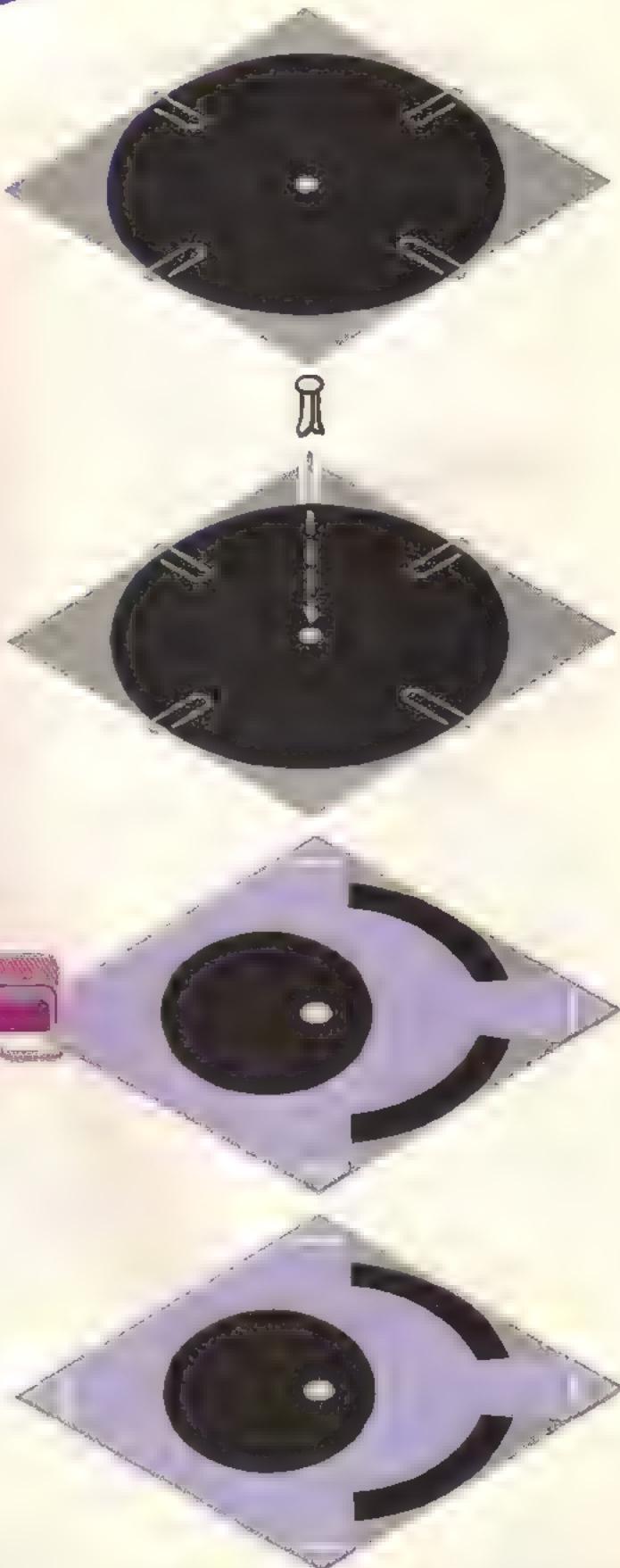
# STARWHEEL

(continued from page 31).

## A Map of the Stars

### How to Put Together Your Star Wheel

- 1.** Glue the black circle to the cardboard circle. DO NOT GLUE THE PURPLE SQUARE TO THE CARDBOARD SQUARE.
- 2.** Put the circle on top of the cardboard square. Move it until the curves of the circle just barely touch all four sides of the square. To keep it in place, attach it with paper clips.
- 3.** Find the blue dot in the center of the circle. Use scissors or a pencil to poke a hole through the center.
- 4.** Put a paper fastener through the hole and fasten it. Remove the paper clips.
- 5.** Cut out the three gray areas on the purple square. Be careful not to cut into the purple area.
- 6.** Put the purple square on top of the circle. Its corners should line up with the corners of the cardboard square. Don't worry. The purple square is supposed to cover up some of the stars.
- 7.** Find the staple marks at the four corners of the purple square. Staple it to the cardboard square.
- 8.** Turn the circle to make sure it turns freely.
- 9.** Now you're ready to use your star wheel.





LIL' STARS © 2001 DANIEL PF. AVNI

(To keep your directions handy, you may want to cut them out and put them on the back of your star wheel.)

### Using Your Star Wheel

1. Turn the circle until you find today's date.
2. Choose the hour tonight when you're going to use the star wheel. Subtract one hour if your area uses Daylight Saving Time. Find that time on the purple part of the wheel.
3. Line up today's date with the hour you chose. Use a paper clip to hold the star wheel in that position.
4. Take a flashlight and go outside with your star wheel on a clear night. Your family may want to join the fun.

5. Find south. If you face west, where the sun sets, south is on your left. Now, stand facing south.

6. Hold the star wheel over your head. Make sure the corner marked south is pointing south. Use a flashlight if you need it. Now you can read the star wheel like a map. Its stars should match the position of the stars you see up in the sky.

7. The Big Dipper is a constellation that is easy to find. Can you spot it tonight? See how many other constellations you can find.

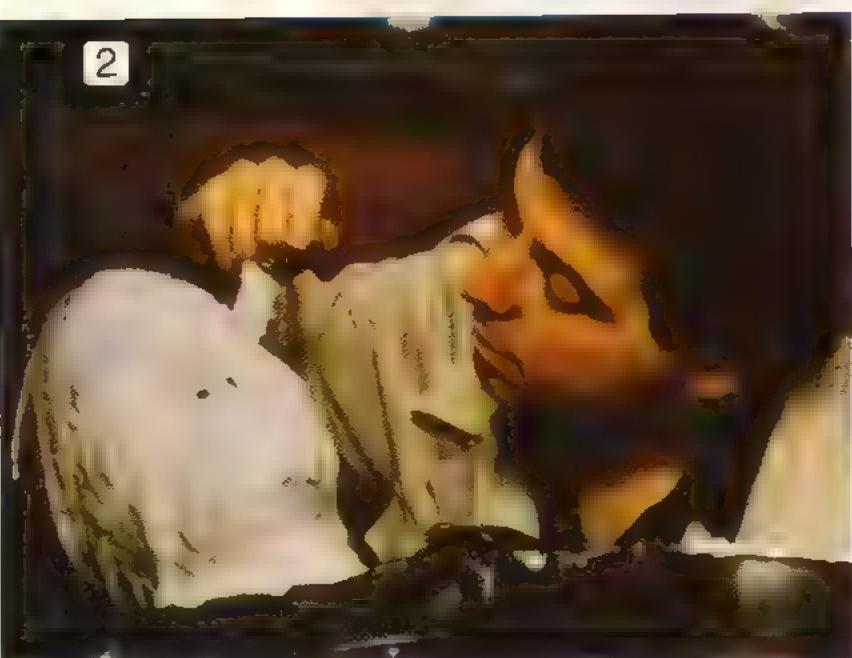
# I Was a Teenage Werewolf

1

It all began at night...at 11:30 p.m., to be exact. I was sitting in my room watching my favorite movie—“I Was a Teenage Werewolf.” I had just finished the first two chapters of the book when I heard a knock at the door. I thought it was my mom or dad, so I got up to answer it. But when I opened the door, there was no one there. I was confused, so I went back to my room and continued reading.



2



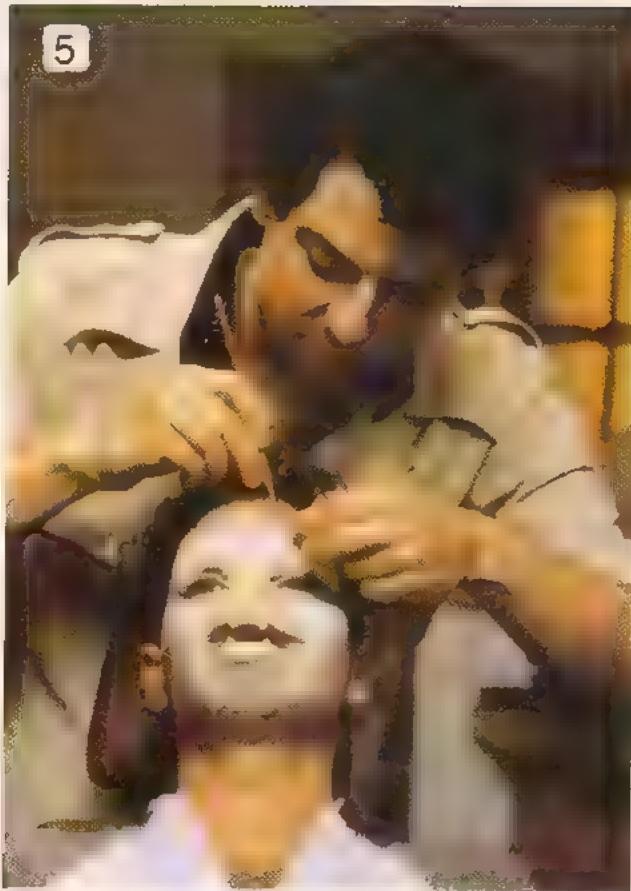
It all began with movie make-up man Norman Bryn—and a whole lot of rubber. First, Norman told me not to move or speak while he spread on some stuff called alginate to make a mold of my face. Alginate is the goo the dentist uses on your teeth when you get fitted for braces.

3



After the alginate began to harden, Norman carefully pulled it off. He used it for a plaster mold to make a perfect mask of my face. Here's the finished rubber mask that helped turn me into a werewolf. My wig is hanging behind. Real spooky, huh?

Here I'm getting fitted with my werewolf snout. To make it, Norman poured a rubber mixture into the mold. After the liquid gels, it's baked so that it becomes foam rubber. The foam snout is very flexible—like skin.



Now for the hard part. I have to sit still for the next seven hours while Norman carefully applies and paints the other rubber pieces. Me sit still! Let me tell you, it wasn't easy!



After he's finished painting, and my wig is in place, Norman layers and glues hair all over my neck and the sides of my face.

Was I shocked when it turned midnight and I looked at myself. I was really a werewolf! I even scared myself. Hey, wait—I could really get into this! Anyone for Halloween?



# Extra!

by Ellen R. Mednick

You may be real busy getting ready for Thanksgiving. But take a break—and try this EXTRA!

## Math Miracles

Wow your friends with some math magic. You'll need a penny, a dime—and a friend!

Ask your friend to hide the dime in one hand and the penny in the other. Tell your friend that you can guess which hand is holding the dime and which is holding the penny.

Ask your friend to silently multiply the value of the coin in the right hand by 4, 6 or 8. Then multiply the value of the coin in the left hand by 3, 5 or 7. (The value of the penny is one and the dime is 10). Then ask your friend to add the results and give you the answer.

If the answer is an even number, the penny is hidden in the right hand. If the answer is an odd number, the penny is hidden in the left hand.



## Star Light, Star Bright

You've read all about Halley's comet. Now here's a star filled riddle for you: What stars did the sheriff put in jail? To find the answer, begin with the S in the red box. Spell your way to the S in the blue box without crossing the lines. The path you draw will be the answer to the riddle. The Did It! page has the answer.

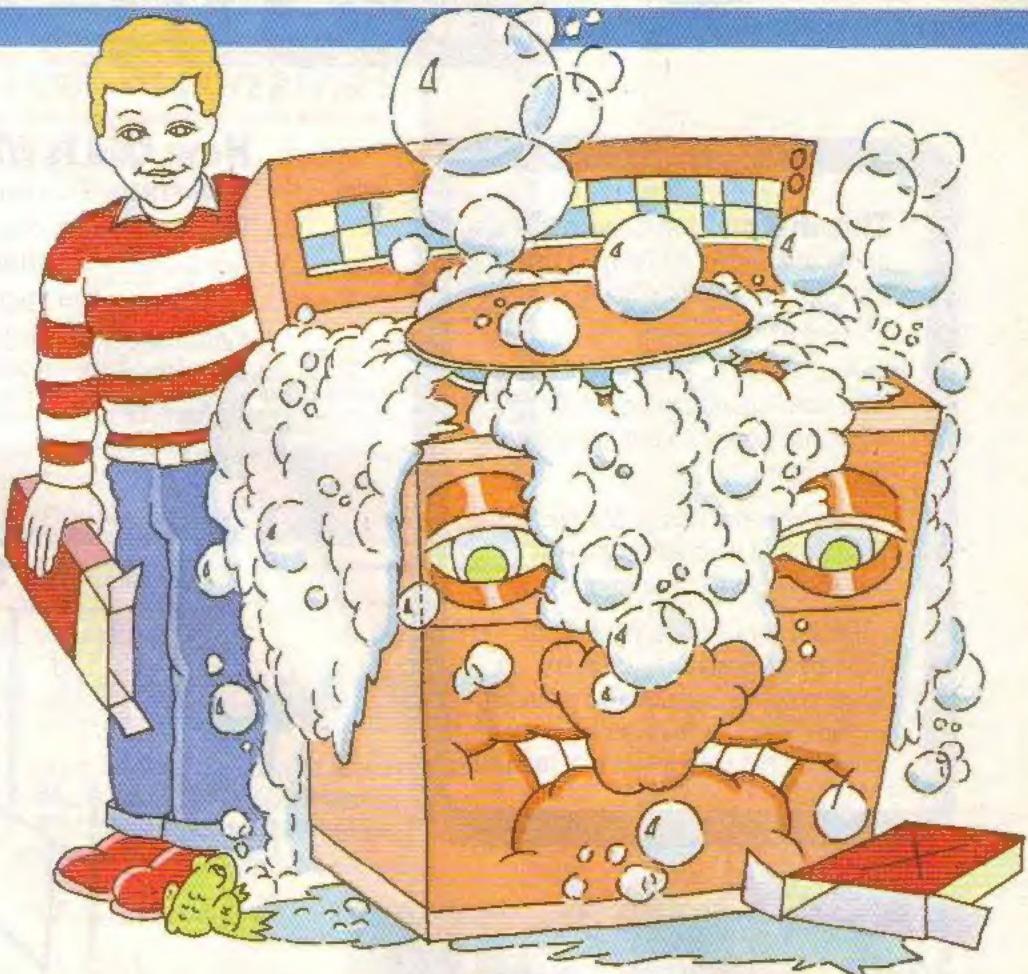
V	J	N	Z	X	E
K	H	I	G	F	G
P	M	T	S	T	L
R	O	Y	A	R	S
C	O	S	P	F	E
L	H	G	A	B	U
N	P	C	D	L	T

## Holiday Cheer

The holidays are fast coming up, and kids everywhere are looking for ways to earn some extra spending money. Here's one weird way that's sure to earn you some money—and amaze your parents at the same time. Do the laundry! To separate the soap from the suds, just send a stamped, self-addressed business size envelope to:

**Laundry Tips for Kids  
Whirlpool Corporation  
Appliance Info Service  
Administration Center  
2000 U.S. 33 North  
Benton Harbor, MI 49022**

**CONTACT LAUNDRY TIP**  
**#1: Remove all frogs and rocks from pockets before throwing jeans in the washer!**



## That's Cute!

You read about why scientists say some people think certain things are cute. Now here's your chance to send us a photo or picture of something you think is cute. Remember, tell us why you think so. We'll choose our favorites. The winners will get T-shirts. Send your entries to:

**3-2-1 CONTACT**

**P.O. Box 599**

**Ridgefield, NJ 07657**

**P.S. Sorry, we can't return photos or art work!**

# Did It! ID

**Thank You!** We'd like to thank some great folks for helping us put together this month's 3-2-1 CONTACT:

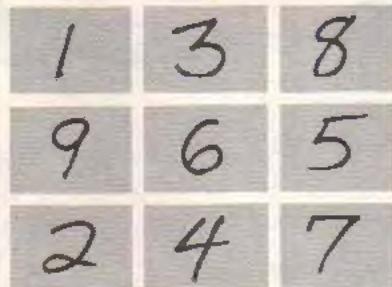
Amy Roberts, our student intern, who now knows all about the hard work that goes into putting together every issue.

The National Zoo in Washington, DC, for their kind assistance in helping us with our animal story;

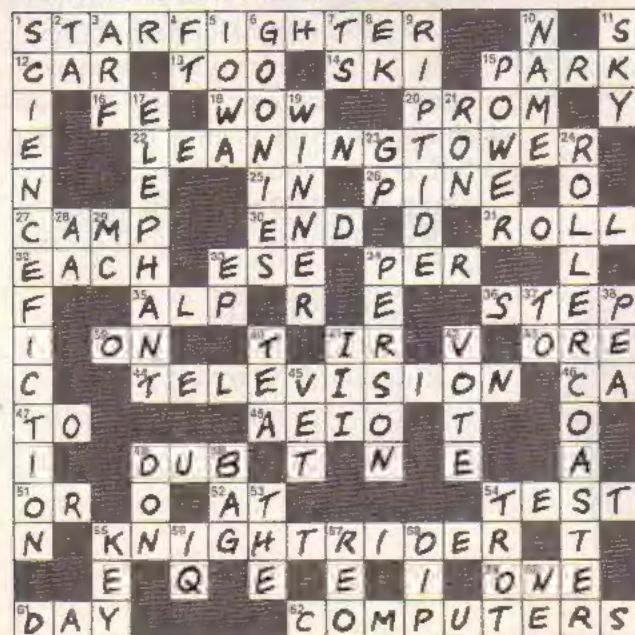
Professor Charles Whitney of Harvard University and Dr. Bill Gutsch of the Hayden Planetarium in New York City for their guidance in writing the Halley's comet feature.

## A Sneaky Snack

Here is the order of the pictures as they appear on the page.



## Crossword Puzzle

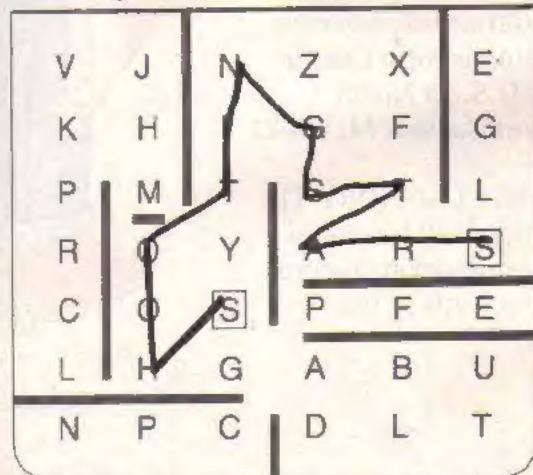


## How Old Is It?

**After 1910:** TV, comic book, Monopoly, Michael Jackson poster, Star Wars poster, digital clock, books on computers and space, pushbutton telephone, the super constellation plane, Cabbage Patch doll, computer, headphones, Empire State model, Mickey Mouse cap.

**Before 1910:** pennants (the places existed), wall clock, boomerang, Teddy bear, flag, desk lamp, typewriter, bat, the truck (old model), Statue of Liberty model.

## Starlight, Star Bright



## Next Month!

Here's some of the exciting stuff coming your way in the next 3-2-1 CONTACT:

### Toy and Game Issue

Kids Rate the Newest Board Games  
Find out what's hot and what's not in the world of board games.

### Bubble Magic

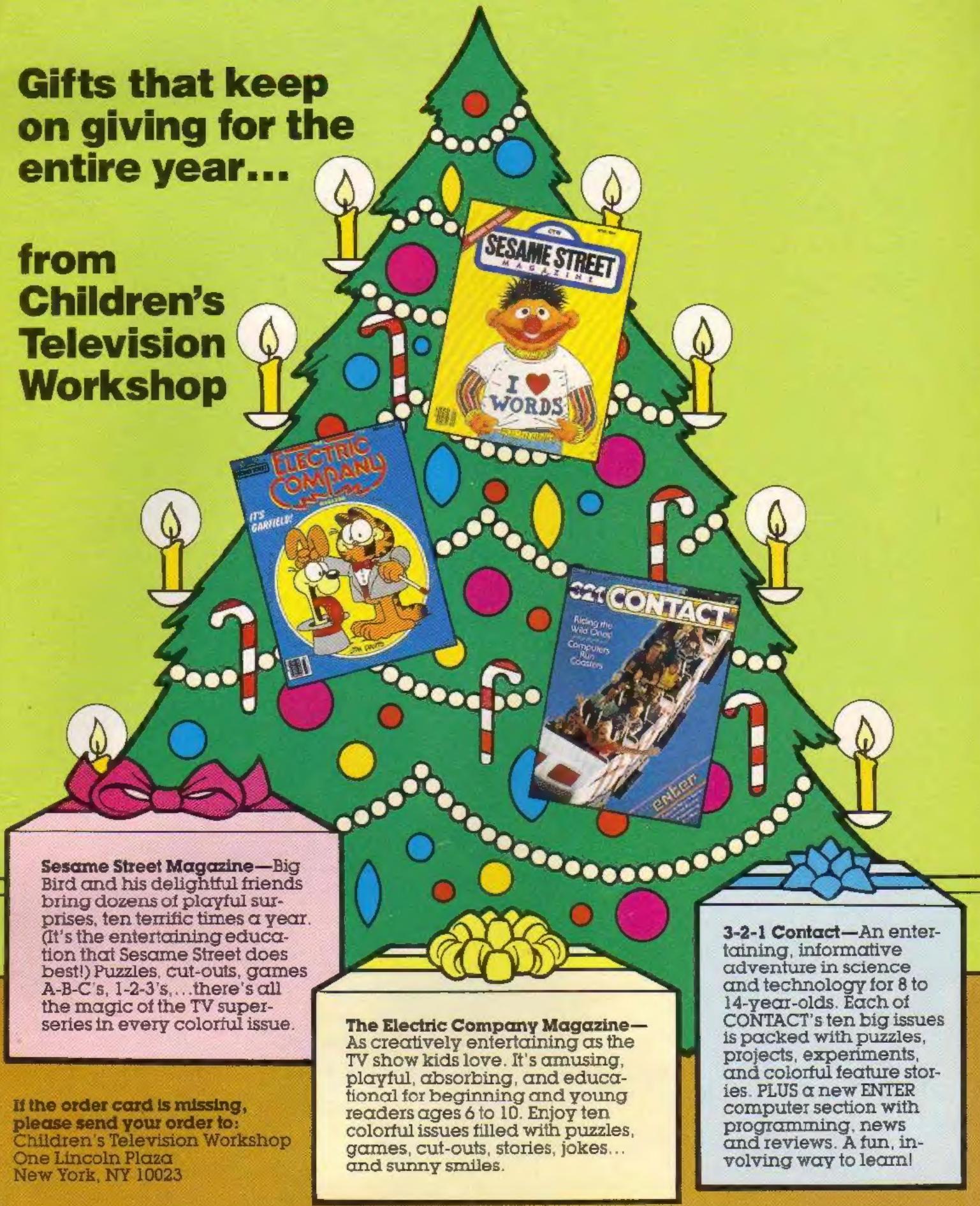
Meet a man who turns blowing bubbles into science.

**Plus The Bloodhound Gang, Factoids, ENTER Section with Computer Puzzles and More!**

# HOLIDAY FUN

**Gifts that keep  
on giving for the  
entire year...**

**from  
Children's  
Television  
Workshop**



**Sesame Street Magazine**—Big Bird and his delightful friends bring dozens of playful surprises, ten terrific times a year. (It's the entertaining education that Sesame Street does best!) Puzzles, cut-outs, games A-B-C's, 1-2-3's...there's all the magic of the TV super-series in every colorful issue.

If the order card is missing,  
please send your order to:  
Children's Television Workshop  
One Lincoln Plaza  
New York, NY 10023

**The Electric Company Magazine**—As creatively entertaining as the TV show kids love. It's amusing, playful, absorbing, and educational for beginning and young readers ages 6 to 10. Enjoy ten colorful issues filled with puzzles, games, cut-outs, stories, jokes... and sunny smiles.

**3-2-1 Contact**—An entertaining, informative adventure in science and technology for 8 to 14-year-olds. Each of CONTACT's ten big issues is packed with puzzles, projects, experiments, and colorful feature stories. PLUS a new ENTER computer section with programming, news and reviews. A fun, involving way to learn!

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